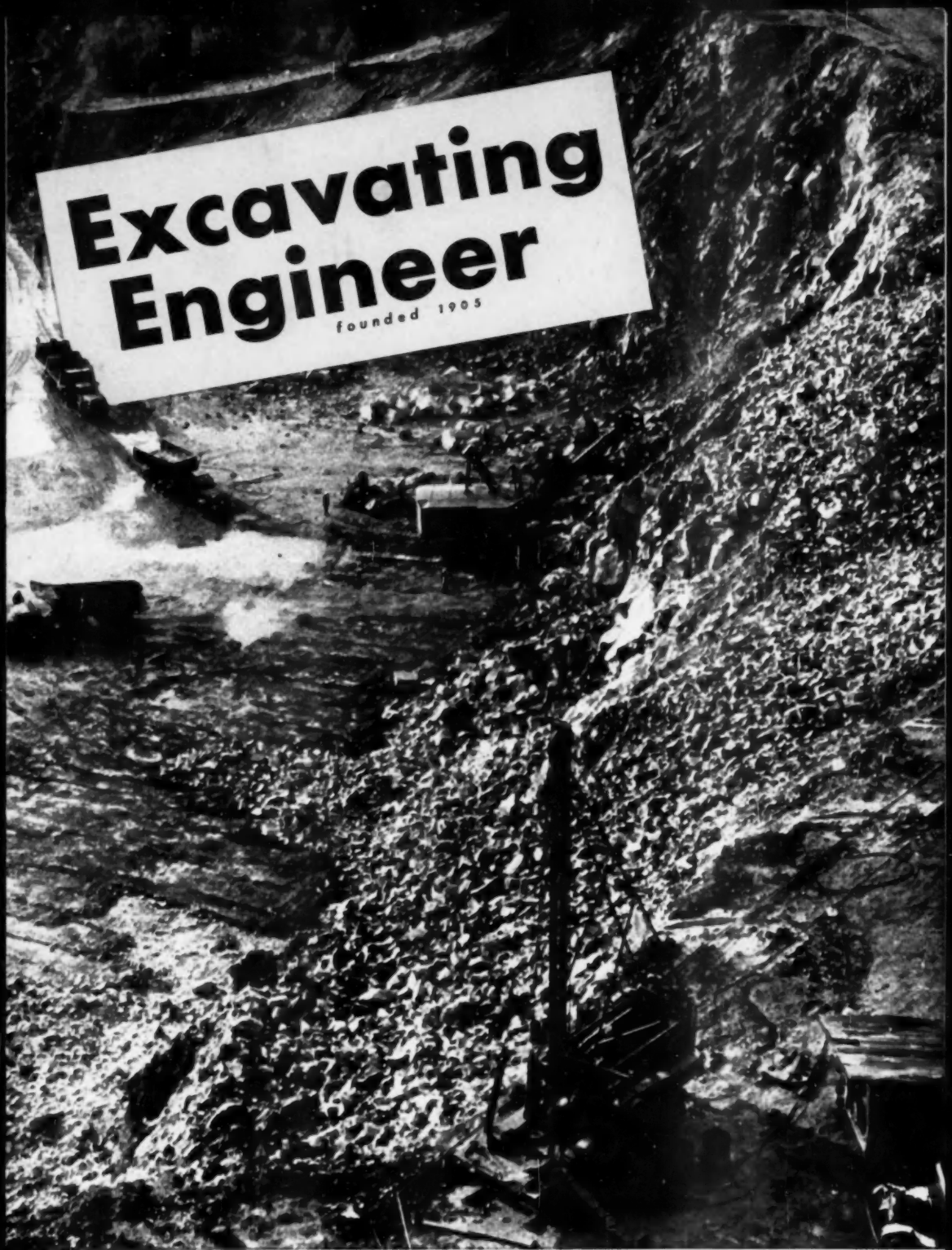
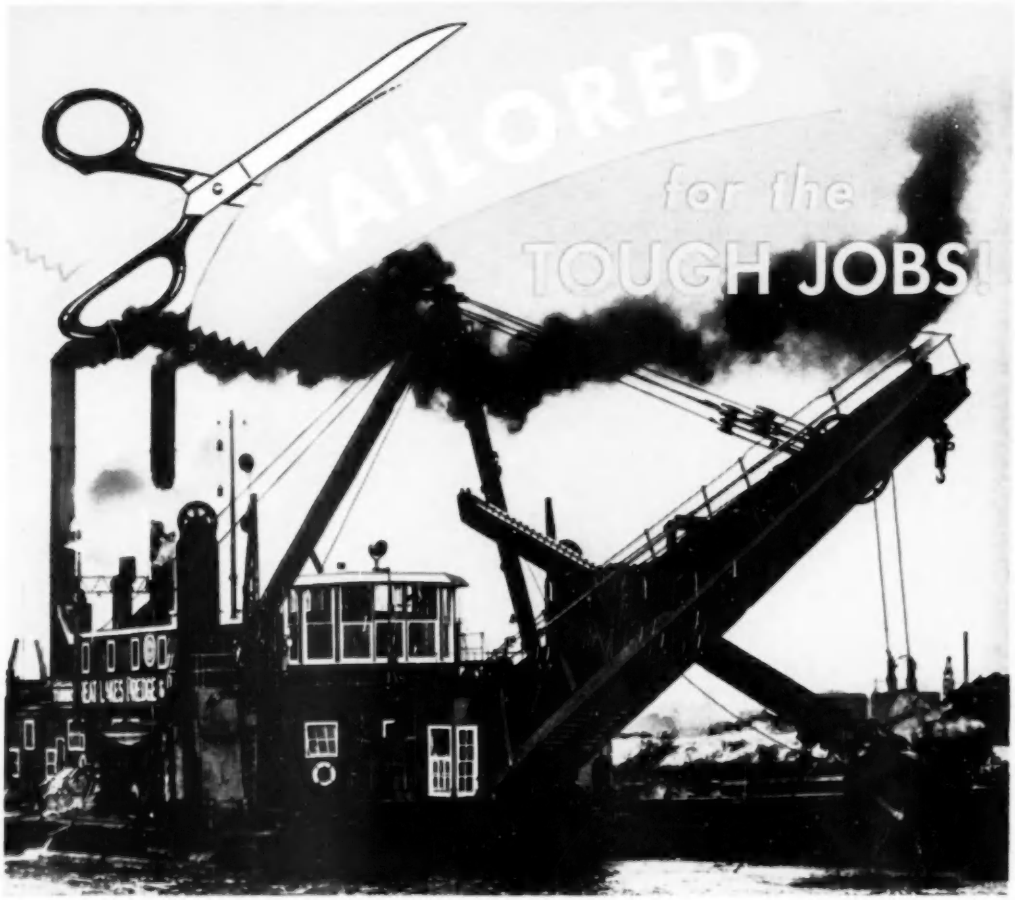
Excavating Engineer

founded 1905



• Portland cement—at a 2-million-barrel a year clip—is the end product of these quarry operations at Calaveras Cement Co., San Andreas, Calif. See article, page 14.

April 1949



That's A Bucyrus-Erie Dipper Dredge!

For heavy-duty underwater digging and work in close quarters, a Bucyrus-Erie dipper dredge can handle a variety of projects demanding high output with outstanding economy of operation.

In building a dipper dredge for you, Bucyrus-Erie engineers draw on a vast store of practical experience gained since Bucyrus-Erie built its first dredge in 1884, and couple this knowledge with the most complete manufacturing facilities in the industry. Close supervision of manufacture, plus undivided responsibility from start to finish, assure you of a high quality machine that's "years ahead" . . . a machine that can insure the success of your dredging operations.

Whatever your dredging problems, whether you need a dipper, hydraulic or placer dredge, Bucyrus-Erie is prepared to give you the best!

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More grip for Graders

and Earth Movers, too!

JUST look at that o-p-e-n c-e-n-t-e-r self-cleaning tread and those massive lug bars and you'll see why Goodyear Sure-Grips deliver more traction than other off-the-road tires.

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Hard Rock Lug for super-stamina in all rock work

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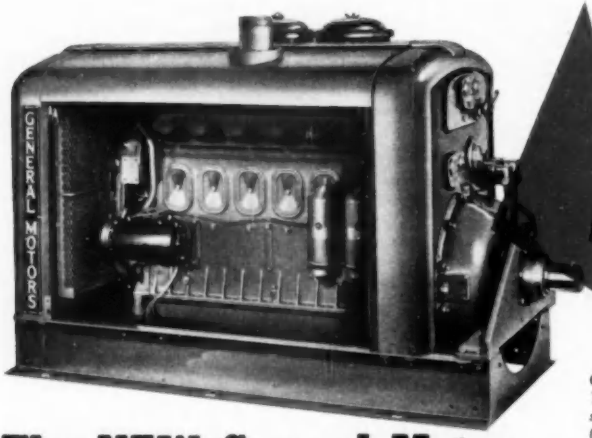
MORE YARDS ARE MOVED ON GOODYEAR OFF-THE-ROAD TIRES THAN ON ANY OTHER KIND

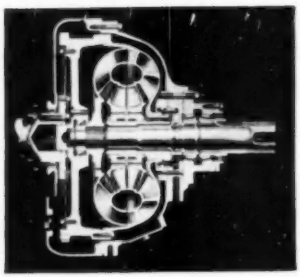


A Combination Torque Converter and Fluid Coupling *Integral with the Engine*

General Motors 71 Diesels equipped with the new GM Torque Converter take up no more space or weight than the same engines with conventional friction clutch and power take-off. Available in 3-, 4-, and 6-cylinder single engine units. Twin 4 and Twin 6 models having engine ratings from 75 to 300 H.P.

The NEW General Motors DIESEL ENGINE-TORQUE CONVERTER UNIT

HERE is a complete, integrated Diesel engine-torque converter unit that combines the inherent efficiency of the GM 2-cycle Diesel engine with the features and advantages of *both* torque converter and fluid coupling. It provides *torque multiplication up to 4 to 1* for starting variable heavy loads. It also provides *highly efficient transmission of power* during light load periods by *automatically shifting to fluid coupling* in the upper speed range.



In the new GM Torque Converter, oil does the work. Automatic transition from torque multiplication of 4:1 at stall to 1:1 in upper speed range.

A smooth, uninterrupted flow of power, delivered through a liquid, *prevents engine stalling* under any load and *protects both engine and driven machinery from sudden shocks.*

One Manufacturer—One Responsibility

Up to now most engines and hydraulic drives have been separate units. The result—compromise designs and divided responsibility. Now General Motors offers a new torque converter specifically designed and manufactured as an integral part of the General Motors Series 71 Diesel engine. It is a self-contained unit built by one manufacturer providing a long needed saving in space and weight as well as certain desirable operating characteristics not available before.

This new power unit will get the most work done in the least time because the engine operates in its most efficient speed range at all times—delivering maximum engine horsepower regardless of the speed of the load. *Maximum torque to start heavy loads PLUS maximum horsepower to keep the load moving.*

Everyone with a hard job to do in the oil fields, in construction, in mining or in logging should have all the facts about this compact, flexible GM Diesel Engine Torque Converter unit. *Write today for a complete description.*

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DIESEL BRAWN WITHOUT THE BULK

GM GENERAL MOTORS DIESEL POWER

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Excavating Engineer

Founded 1903

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In at least two ways, cement is not unlike steel: It is a vital construction material and its manufacture starts with excavation. Here is the story of cement from quarry to railroad car at one of California's most efficient and self-sufficient plants — Calaveras Cement Co., San Andreas.

Long Deep Cuts on Missouri-Pacific Lines Relocation 16

Clarkson Construction Co., Kansas City, Mo., and O'Dell and Riney Construction Co., Kirkwood, Mo., have moved over two million cu. yd. of compacted clay, gravel, boulders and solid rock from Tip Top Hill, Mo., to eliminate bad grades and curves. Porter-Dewitt Construction Co., Poplar Bluff, Mo., has started a similar project involving the handling of an additional 1½ million cu. yd. between Vulcan and Gads Hill, Mo. When all the work is completed, helper engines will no longer be needed on the line between Bismarck and Piedmont.

England's "Monster" Goes To Work — by I. W. G. Freeman 19

Recently exported from the U.S., the first 25-yd. dragline erected in England has started stripping coal near Bedlington, Northumberland, for Parkinson Strip Mining Co., Ltd.

Constructing Calapooya's Sawmill — by Tom Riley 20

Start work in mid-spring, 1947. Remove 270,000 cu. yd. of clay and gravel for a 57-acre sawmill pond. Erect acres of mill buildings where the water table averages two feet below ground level. Build 27 miles of logging road requiring 300,000 yards of excavation and 100,000 yards of crushed rock. Result: Weyerhaeuser Timber Company's ultra-modern combination saw-paper mill goes into operation this spring at Springfield, Ore.

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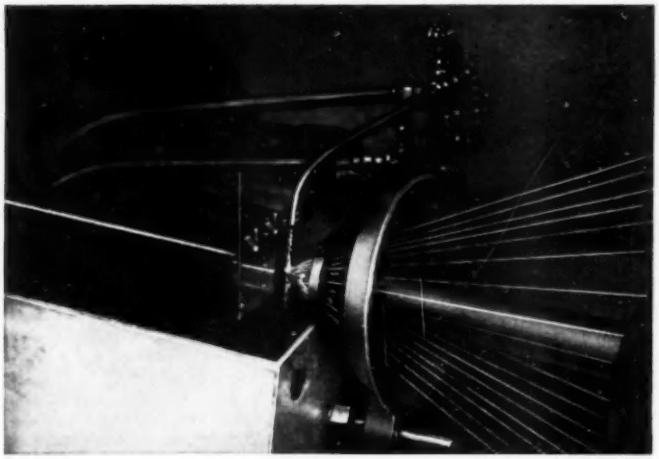

Hot Oil Treatment for Steel Muscles

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Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write—Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Mass.

Field lubrication of wire rope does much to prevent friction and corrosion and should not be neglected. However, it is only a *surface* treatment. To provide proper *internal* lubrication, every strand of Wickwire Rope is actually formed in a stream of hot, quick-setting lubricant which packs the many spaces between the wires of the strand.

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YOU have jobs coming up ahead of you—jobs you haven't even figured on yet and you are going to have *holes* to fill in your equipment setup.

Some of these holes are going to be in the *Key Spots*, spots where the profit begins, spots like this batch plant job where the whole setup stops when the Crane stops.

Northwest Cranes, Shovels, Draglines and Pullshovels bring you features that keep the job running smoother and faster. Such advantages as the "Feather-Touch" Clutch Control, Uniform Pressure Swing Clutches, the Cushion Clutch, Northwest Simplicity of Design, Northwest Steering, Northwest Dual Independent Crowd and other Northwest features assure higher output and less down time. You can't afford to have anything but the best in the heart of the job. Ask about these features and plan to fill those future equipment needs with Northwests.

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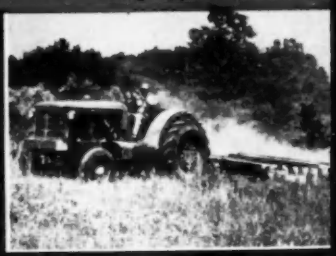

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Plus

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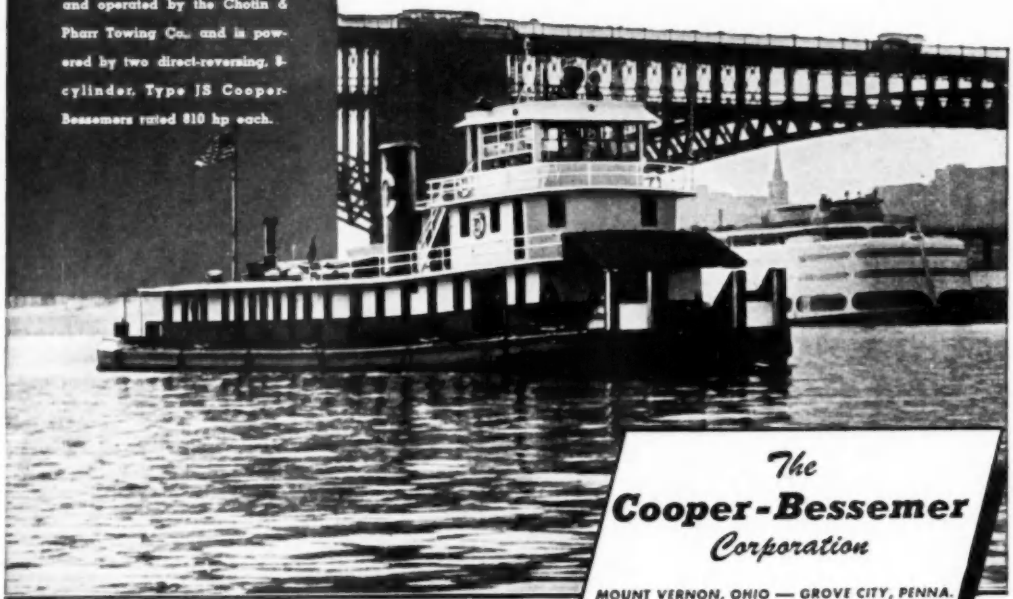
The "Irene Chotin," built by the Nashville Bridge Co., is owned and operated by the Chotin & Pharr Towing Co., and is powered by two direct-reversing, 8-cylinder, Type JS Cooper-Bessemers rated 810 hp each.

For seven long months, June 22 to January 28, the "Irene Chotin" worked *continuously*, actually making twenty-four 1500-mile round trips between Buckhorn Point and Mt. Vernon, Indiana, moving 758,502 barrels of oil!

Performance like this—efficient, trustworthy performance at its best—in towboats, draglines, locomotives and other fields, give definite proof of outstanding Cooper-Bessemer diesel quality and superiority. It's a fact worth considering in your plans for the future.



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FOUND: Higher output in mines and quarries when Bucyrus-Eries go to work. Reliable service and efficient design contributing to greater profits. Box 54-B
LOST: Excessive maintenance and repair costs; expensive, time-wasting delays and operator fatigue. Box 54-B

Finders Keepers!

Mine and quarry owners the world over have found that Bucyrus-Eries, like the 2½-yard 54-B electric shovel shown working in a Minnesota iron mine, can deliver the consistently high output they need. They've found through experience that Bucyrus-Erie "years ahead" design, expert craftsmanship and the use of top-grade materials produce a machine that stands up to hard digging over long periods with remarkably low maintenance and repair costs. Operators have found that Bucyrus-Erie's responsive Ward-Leonard control means a faster, smoother cycle — producing more yardage every shift, yet easy on both operator and machine. Keep these facts in mind when choosing your next heavy-duty excavator.

62L49c

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

7 Reasons WHY DUMPTOR Maintenance Cost Stays Low in Toughest Service

The hauling unit built by a shovel manufacturer for work with shovels.

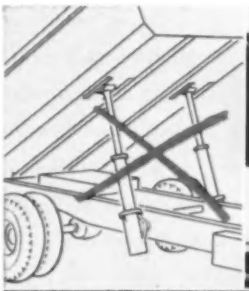
LESS TIME OFF . . . MORE TIME TO HAUL because:

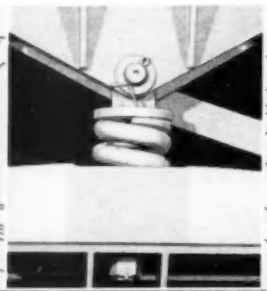
1 No Body Hoist Maintenance. Dumptor has no body hoist. Gravity alone tips 6-yard body in one second in zero weather.

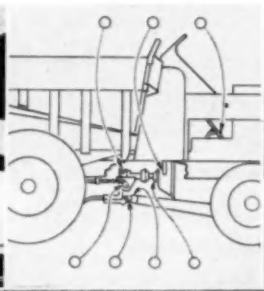
2 One Spring Only, on pivot-mounted front axle. No other springs on either axle. No spring maintenance problem.

3 Lubrication Chart shows just 7 daily lubrication points on Dumptor chassis. Daily lubrication wastes no haul-time.

4 Big 16:00 x 24" single drive wheel tires. Special heavy duty for off-road work. No rock wedging between duals.

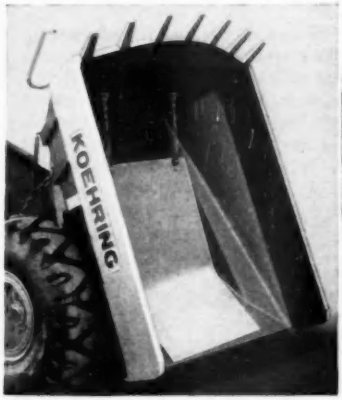




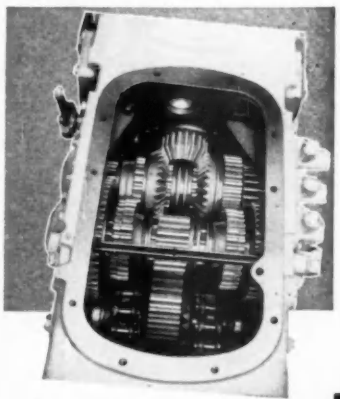


KOEHRING CO. MILWAUKEE 10, WISCONSIN

5 No Dumptor drive axle has ever been broken in rock. They're chrome nickel steel, 4" in diameter, in heavy cast steel case.



6 Kickout pan adds 3/16" steel on top of 3-layer steel-oak-steel bottom. Body sides heavily reinforced with 4" steel channels.



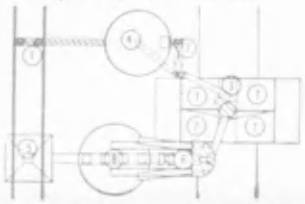
7 Transmission runs in oil . . . lasts longer. Oil changed only once a season. No need for continuous refilling. Case is oil-tight.

New JOHNSON Ready-Mix Plant Complete in ONE PACKAGE

Here's How it Works

Bulk cement, received by rail or truck, conveyed by screw conveyor from cement receiving hopper (1), to bucket elevator (2), is discharged into central cement storage compartment of bin (3), or auxiliary cement storage silo (4).

Aggregates, received in hopper bottom cars or trucks, conveyed by belt-feeder from aggregate receiving hopper (5), to aggregate bucket elevator (6), are discharged into aggregate compartments (7), of 100-yard bin or aggregate storage silo, (8), or two-in-line silos. Johnson Concentric Batcher and Johnson Water Weigh Batcher, both on batcher floor below bin, discharge into the mixer or through the other leg of 2-way batcher-discharge directly into a truck-mixer.



High Production . . . New Low Investment

Because new conveyor and elevator system provides for ground storage of both cement and aggregates, you need less overhead storage capacity. Result: Lower investment cost that reduces your cost per yard of concrete.

50% Lower Erection Cost

Erection cost of new Johnson Ready-Mix Plant is reduced by approximately 50%. Welded units can be erected in half time it takes to put up "bolted" plant. Means important saving.

Quickly, Easily Moved

Prefitted units disassemble fast. Bin sections and steel silos fit railroad cars and flatbed trucks. Ship anywhere—to bridge jobs, dam jobs, school and hospital jobs — wherever on-job mixing will pay you.

Overhead Storage Easily Increased

By adding a welded section to the elevators and the bin, overhead bins can be easily and economically increased from 100 yard to 150 yard storage capacity.

Contact Johnson today for New Concrete Plant Catalog.

THE C. S. JOHNSON COMPANY

KOEHRING SUBSIDIARY • CHAMPAIGN, ILLINOIS

Quarrying Cement-Rc "Jumping Frog"

By Robert J. Green

THREE MILES west of San Andreas, Calif., is the main plant of the Calaveras Cement Co. This plant is producing two million barrels of cement annually now, to help meet the growing shortage of this material. Built in 1925, it is one of the most efficient cement manufacturing plants in central California.

Situated in the rugged Sierra Nevada foothills at an elevation of 1,100 feet above sea level, the plant is in the heart of the historic gold camp country, immortalized by Mark Twain in his "Celebrated Jumping Frog of Calaveras County." Times have changed in the century of progress since the gold rush. More emphasis seems evident now on the importance of things like cement, lumber and crushed rock. Gold is still mined—with dredges—but its adventure is gone.

Unusual Deposit Near Plant

Rock near the San Andreas mill is unusually suitable for cement manufacture. There is an extensive deposit of metamorphosed limestone, which explorations show to be good for 50 or more years of plant operation. Silica is present in the form of shale, which is intermixed with lime in some of the lower grade deposits. The quarry has some clay, also, and most of the iron content is there. The plant has to purchase only two carloads of iron ore per week to keep up its operation.

Several months ago, some cement manufacturers from Sweden visited the Calaveras operations. They looked over the plant layout before traveling by automobile up to the quarry.

"How far do you have to haul your coal for the kilns?" one Swede asked Plant Superintendent E. M. Barker.

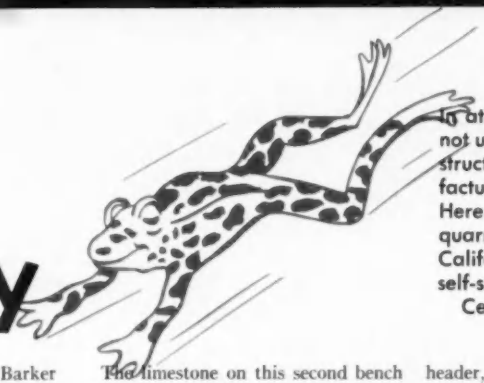
"We don't use coal," said Barker. "We use natural gas, and it's available here at the plant. There are also standby oil burners in case of a gas shortage."

The Swede expressed amazement. His plant was using coal hauled 17 miles. But the quarry itself gave him his greatest surprise. When he asked

• Above: High on second bench, Bucyrus-Erie 29-T churn drill puts down 9-in. holes, averaging 30 feet of hole every eight hours.

• Left: 5-yd. Bucyrus-Erie 120-B shovel loads blasted rock to Autocar tractor with 40-ton Fruehauf trailer mounting two 12.6-yd. Gar Wood side-dump bodies.

ck in County



In at least two ways, cement is not unlike steel: It is a vital construction material and its manufacture starts with excavation. Here is the story of cement from quarry to railroad car at one of California's most efficient and self-sufficient plants—Calaveras Cement Co., San Andreas.

Barker where he got his silica, Barker gestured toward the shale which lies up over some of the limestone. "Right up there," he said. "Practically everything we need is right here in this quarry. Our mining problem is how to dig it out as fast as possible while roughly separating it."

Two-Bench Operation

The main quarry consists of two benches, both served by feeder roads which connect with the main 5½-mile road downgrade to the plant. The top bench has a face about 100 feet high although some 120-ft. holes have been drilled. Much of the shale is found on this upper bench, as well as about two feet of clay overburden.

The second bench is 100 feet below the first. On this bench is found an excellent deposit of hard, metamorphosed limestone. It looks exactly like grayish-white building marble, except that geologists say it will not polish.

The limestone on this second bench is extremely blocky, and full of cracks and fissures. The shale above is also tilted at a crazy angle, making drilling very difficult. The blocky nature of the deposit makes blasting difficult, too. An average day in the quarry calls for the secondary drilling and shooting of about 200 oversize boulders. If some way could be found to whip this secondary drilling problem, mining costs would be reduced considerably.

Shovels at the quarry are all electric powered, power coming in over Pacific Gas and Electric Co. transmission lines. Flexible rubber-covered cables carry it to the machines from transformer stations.

The quarry is also served from one end by a compressor house. An Ingersoll-Rand Imperial type 10 compressor is located here, driven by a 125-hp General Electric motor. Compressed air is delivered to wagon and jack hammer drills through a 2½-in. pipe header, with takeoff valves and manifolds at intervals of about 100 feet.

Drilling is a job that never gets finished. It goes forward on a two-shift basis with a churn drill, and one shift with air tools.

The machine which draws the heaviest duty and runs the most hours per day is a Bucyrus-Erie 29-T churn drill. Crawler-mounted, this rig is powered by electricity. It carries a 9-in. diameter drill bit on the end of a tool string which usually averages about 3,000 pounds in weight. It has operated from both benches of the quarry.

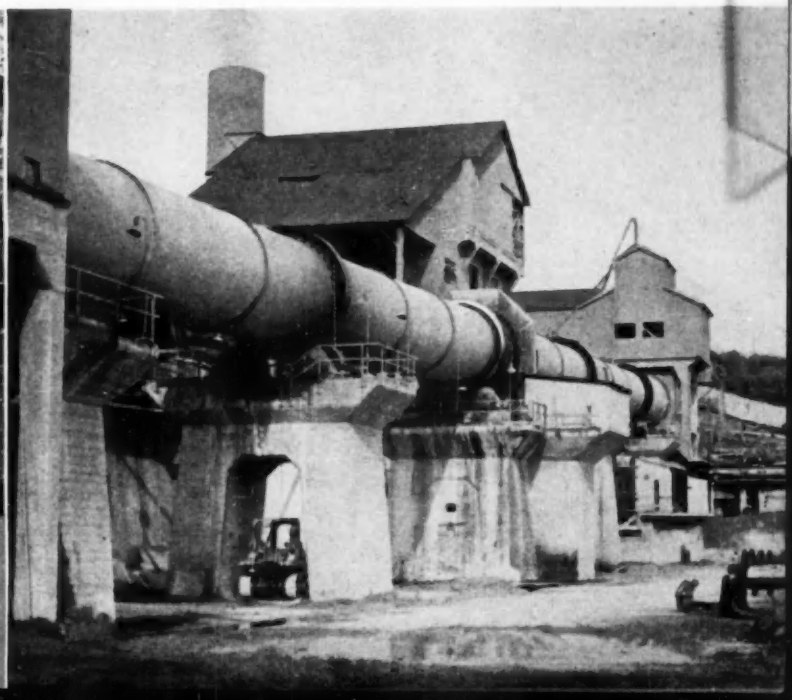
An older Armstrong churn drill also works in the quarry. It carries a 6½-in. bit on an 1,800-lb. tool string and is wheel mounted. Other drilling equipment includes an Ingersoll-Rand FM-2 wagon drill and a minimum working force of four Ingersoll-Rand 55-lb. Jackhamers.

Holes are placed at least 35 feet

Continued on page 30

• Above: Using an Ingersoll-Rand Jackhamer, workmen sinks a hole in an oversize rock.

• Right: After being ground very fine, material is sent through this long kiln where it is burned at 2,500° F.



Long, Deep Cuts on

• This aerial view looking north shows about 2.5 miles of the new roadbed being built over Tip Top Hill, Me., near Arcadia. Hauling units under shovel (center) carried excavated material about 6,000 feet to place fill for new embankments.

Relocation

Clarkson Construction Co., Kansas City, Mo., and O'Dell and Riney Construction Co., Kirkwood, Mo., have moved over two million cu. yd. of compacted clay, gravel, boulders and solid rock from Tip Top Hill, Mo., to eliminate bad grades and curves. Porter-Dewitt Construction Co., Poplar Bluff, Mo., has started a similar project involving the handling of an additional 1½ million cu. yd. between Vulcan and Gads Hill, Mo. When all work is completed, helper engines will no longer be needed on the line between Bismarck and Piedmont.

THREE MILES are being lopped off 52 miles of Missouri Pacific railroad line between Bismarck and Piedmont, Mo., by relocation which will result in lower grades and less curvature. The main sections of the project are south of Arcadia and Ironton, Mo., over Tip Top Hill and north of Piedmont over Gads Hill between Vulcan and Gads Hill. Work on Tip Top ridge is nearing completion with two million cu. yd. moved in this one section of the line revision program.

Two contractors have been working on Tip Top, one on the south slope, the other on the north. The Clarkson Construction Co., Kansas City, Mo., held the grading contract on the south end. This work, started in June, 1947, will be completed soon. O'Dell and Riney Construction Co., Kirkwood, Mo., holds the contract for the north slope. Begun in Nov., 1947, this work has been completed.

The Gads Hill contract was let January 14 to Porter-Dewitt Construction Co., Poplar Bluff, Mo., with work not beginning until late in February because of bad weather.

Curves are being cut down over both hills from a maximum of 8° 6′ over Tip Top and 5° 27′ over Gads Hill to 2° and less. Grades are being reduced from a maximum of 2.45% over Tip Top and 1.8% over Gads Hill to 1.25% compensated. This grade will bring this part of the line into conformity with the rest of the track be-

● Dipper after dipper of compacted clay, gravel and boulders from this 60-ft. cut is lifted into Dart-drawn 16-yd. Dixon wagons by 2½-yd. Northwest shovel. Caterpillar D-8 dozer, followed closely by another wagon, cleans up haul road.

● Here another of the excavators — a 5-yd. Marion 111-M dragline — scoops up earth from a deep cut through Tip Top. Caterpillar D-8 bulldozer does grading along embankment.

tween St. Louis and Poplar Bluff (30 miles south of Piedmont.)

Improved Service

When all work has been completed, the railroad will be able to eliminate its helper service completely. Until now helper engines have been used on all of the heavier passenger and freight trains operated over this section, an average of six kept continuously in service. Maintenance and operating costs will also be reduced by the elimination of steep grades and bad curves, with improved schedules and better service another result.

The main cut across Tip Top Hill is about 4,000 feet long with a depth of 150 feet at the crest. Material consisted mainly of compacted clay, gravel and boulders, bedded so firmly that blasting was employed to permit easier loading. Cleveland wagon drills put down 2½-in. holes from 10 to 12 feet deep, Jaeger 600-cfm, Chicago Pneumatic 500-cfm, and Gardner-Denver 500-cfm compressors supplying the air. Blasting was done with Atlas powder used in the ratio of ½ pound per cu. yd.

Use Dragline and Shovels

Excavated material here amounted to two million cu. yd. It was loaded by two 2½-yd. Northwest shovels and a 5-yd. Marion dragline to 16-yd. Dixon wagons pulled by Dart tractors, and 13-yd. Euclids. Hauls averaged over 6,000 feet, material being used to provide a new embankment.

The base of the cut was made 50 feet wide at track level to provide adequate space on each side of the track for off-track work equipment to maintain side ditches. Side slopes were made 1½:1, rather steep for a maximum crest of 150 feet. However, the material is such that little maintenance trouble is expected.

In order to limit the amount of drainage flowing down these slopes to track level, excess excavated material was wasted in draws between the spurs of the hills on each side of the cut. Levees were built along the top of the cut on each side to divert all hill drainage to natural ravines on each side of the ridge.

Location Follows Natural Slope

On the north slope, similar equipment was used as well as 7-yd. Euclid trucks. Here the new location follows the natural slope most of the way, with subgrade just high enough above ground to keep safely above local drainage. One rock cut, however, went down 45 feet for about one-half mile where the new and old lines cross. At this point, the new location is 37 feet below the old — an example of the way the grades were cut all along the way.

At this particular crossing excavation was first performed on one side of the operated track and later on the other side after the track had been placed on a temporary bridge across the part of cut first made.

The new line through the Tip Top section will be 0.7 mile shorter than the old and has 407° less curvature. It is expected to be ready for use sometime this month.

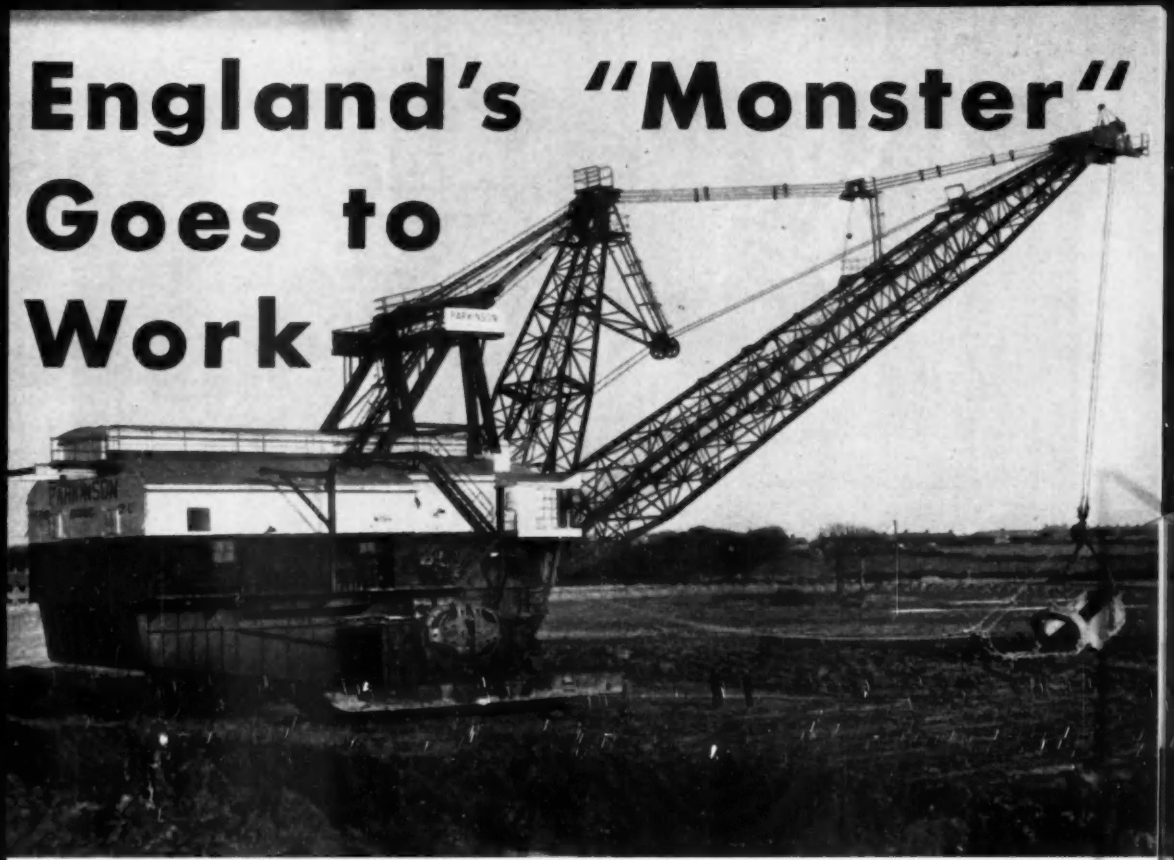
Second Major Section

The second major section between Vulcan and Gads Hill covers a distance of 9½ miles. Excavation — common and solid rock type — totals about 1½

Continued on page 64

● A sample of the excellent haul roads maintained by Clarkson and O'Dell and Riney, contractors on the Tip Top revision, is shown here on the north end of the 4,000-ft. long cut. The final railroad subgrade was cut six to eight feet below the road here.

England's "Monster" Goes to Work



Recently exported from the U. S., the first 25-yd. dragline erected in England has started stripping coal near Bedlington, Northumberland, for Parkinson Strip Mining Co., Ltd.

By I. W. G. Freeman
Director, Sir Lindsay Parkinson and Co., Ltd.

• Above: The landscape at Ewart Hill, Northumberland, England, is being changed constantly by huge 25-yd. gulps of overburden being stripped from the countryside by this Bucyrus-Erie 1150-B walking dragline.

• Below: The mechanical giant releases its bucketful of rock and clay to a spoil bank. Power is provided by a specially erected supply station equipped with five 900-hp. 12-cylinder diesel engines each driving a 600-kw generator.

IN THE past few weeks the English press has been describing as a "prehistoric monster" the new addition to opencast coal fields — a 1,100-ton walking dragline with 180-ft. boom and 25-yd. bucket recently imported from the United States. The machine was purchased from the Correale Construction Co., Hazleton, Pa., U. S. A., by Sir Lindsay Parkinson and Co., Ltd., London, England. A subsidiary, Parkinson Strip Mining Co., Ltd., has been formed to employ the machine at Ewart Hill (near Bedlington, Northumberland), which is the largest single opencast coal operation in the British Isles.

The Bucyrus-Erie 1150-B electric dragline became available in 1947 when Correale's project on which the machine was being used to strip coal near Riverdale, Pa., changed character and required different equipment. Arrangements were made by Parkinson through the Directorate of Opencast Coal in London to purchase and import the machine.

Dismantling started early last May and the first part was delivered to Ewart Hill, Northumberland, July 24 after a 4,000-mile land and sea trip. Erection commenced just one month later under the supervision of A. H. Bartlett, field superintendent, Ruston-Bucyrus, Ltd., who had assisted with dismantling work in the U. S. A. Three derricks and two mobile cranes were used in assembly work which required placing of 8,000 rivets, 19,000 bolts and

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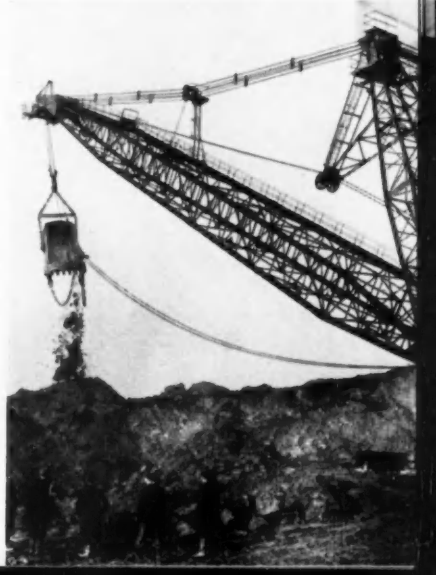
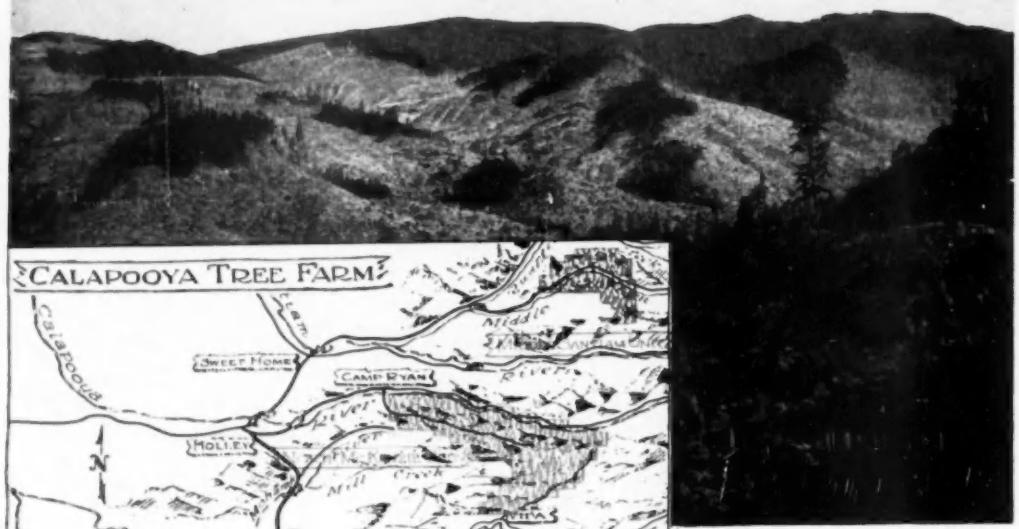
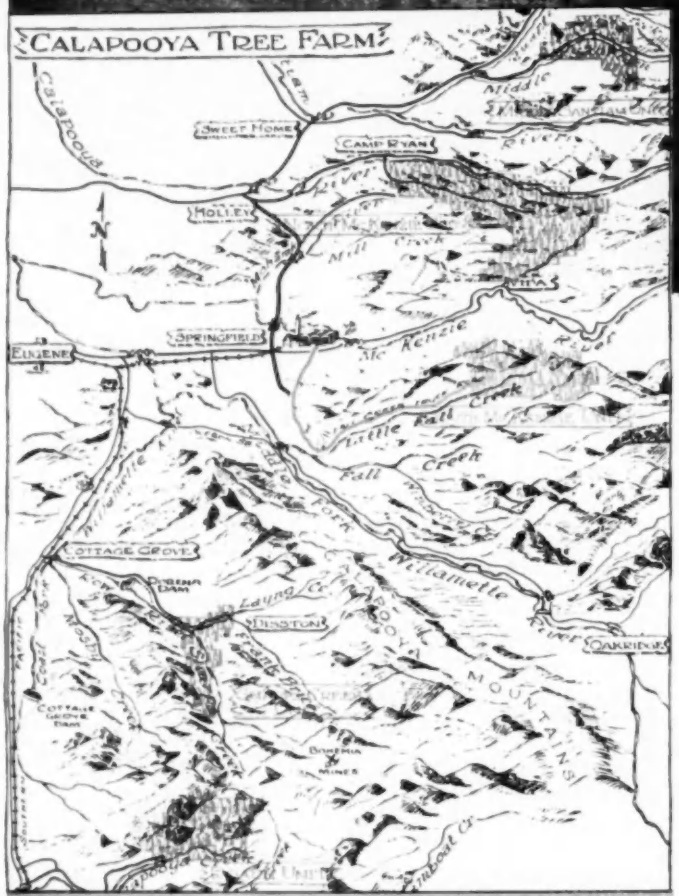


Constructing Calapooya's





• Top: This is a typical tree farm in the Fall Creek area. Checkerboard cutting pattern used in tree farming at Calapooya leaves blocks of seed trees for reforestation. The 8-year perpetual-yield cycle used by Weyerhaeuser provides cuttings of the big Douglas firs every 20 years.

• Above: Sketch map of Calapooya tree farm shows 27-mile hauling road (colored line) constructed from the South McKenzie unit to the new saw-paper mill at Springfield. Locations of other Weyerhaeuser forests units in the huge farm area are also indicated.

Start work in mid-spring, 1947. Remove 270,000 cu. yd. of clay and gravel for a 57-acre sawmill pond. Erect acres of mill buildings where the water table averages two feet below ground level. Build 27 miles of logging road requiring 300,000 yards of excavation and 100,000 yards of crushed rock. Result: Weyerhaeuser Timber Company's ultra-modern combination saw-paper mill goes into operation this spring at Springfield, Ore.

By Tom Riley

A FAR CRY from the thrown-together sawmill of yesteryear is Weyerhaeuser Timber Company's modern combination of sawmill and paper mill at Springfield, Ore.—located in a populated region of the Willamette Valley instead of in the mountains. Completion of the mill this spring heralds large, permanent construction projects and networks of privately-owned access highways in the West Coast timberlands.

The Springfield plant whose cost runs into the millions will draw on the Calapooya tree farm, 155,205 acres of Weyerhaeuser's 1,983,734 acres of

Sawmill

growing timber on 12 farms in Oregon and Washington. When construction crews are through and millmen take over, this plant's double-headrig sawmill and planing mill will be capable of producing 250,000 board feet of finished lumber daily. Covering 240 acres, it will also contain machine shops, offices, a restaurant, dry kilns, lumber storage sheds, three 720-ft. shipping sheds bringing 4½ acres under one roof, and a power plant that operates on a portion of the waste materials. Its paper mill unit contains a complete sulphate pulp mill and container board plant which will use all leftover wood, producing 150,000 feet of paper carton material daily.

Saw-Paper Mill Rare

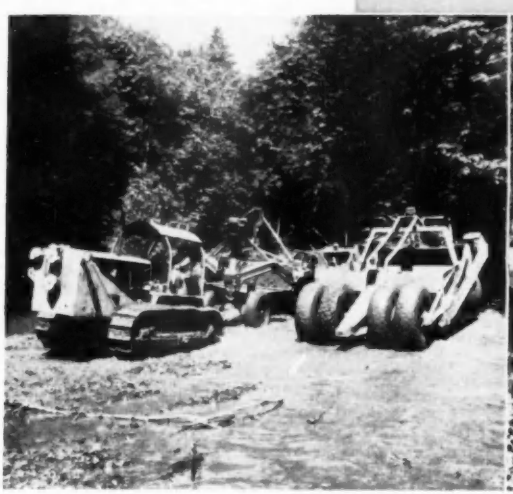
A paper mill integrated with a sawmill is rare, especially in the Douglas fir region of Oregon. A pulp or paper mill ordinarily uses logs of its own as it cannot operate on the low volume, though high percentage, of slab and trimmings produced by a small sawmill. Therefore, instead of scattering several small sawmills throughout the timberlands and burning the slab, trimmings, and treetops, the conservation-conscious Weyerhaeuser company is building this one large mill in a centralized location — 27 to 75 miles from its timber areas. With its pulp unit, the plant will, as Laird Bell, chairman of Weyer-

• **Above:** In one of four gravel pits operated along the Fall River haul road, a ¾-yd. Northwest 25-D shovel loads gravel from a stockpile to a 10-yd. Euclid wagon.

• **Right:** Caterpillar 12 road patrol levels final course on section of Fall Creek road. Three of these rigs handled material dumped by 30 trucks.

• **Below Right:** Good ditching along haul road is important here in the Cascade Mountains where annual rainfall totals 40 to 90 inches. The tractor is a Cletrac FDE with Isaacson dozer.

• **Below Left:** Gravel picked up from stream beds made good roadfill. Here a 15-yd. LeTourneau scraper (left) passes a 14-yd. Wooldridge. Both are D-8 Caterpillar drawn.



• Recent aerial photo of plant area shows logs already hauled in over the Fall Creek road and deposited in the newly-excavated mill pond (far left center). Large sheds in center foreground are for shipping and storage. Sawmill lies between them and millpond. Paper pulp mill is contained in group of buildings at left.

haeuser Board of Directors, has said, "utilize everything but the squeal of the saws."

The centralized location of the plant brings important changes into West Coast sawmill design. The sawmill is being constructed as a permanent unit to supply its pulp mill. To insure enough logs for the winter snow season and summer fire season, its oversize mill pond covers 57 acres. To connect such a centralized mill with its scattered timberlands, the construction of privately-owned access roads is now considered economically sound. Twenty-seven miles of firstclass, private highway has already been built to connect the Springfield plant with just one part of the Calapooya farm, the South McKenzie unit.

First steps in actual construction of the plant were started in mid-spring of 1947, by Del R. Beebe, general contractor of Eugene, Ore. who received the major excavation contracts—foundation excavations for the first buildings, ditching, diking, and the oversize millpond — for a total bid of $120,000. This figure was later increased by $55,000 for extra cost-plus work — miscellaneous fills and construction excavations accomplished by the contractor while on the project.

As the entire plant is located in former pasture and farmland, Beebe found clearing to be practically nil, consisting mainly of stripping a 6-in. minimum of topsoil from the millpond site.

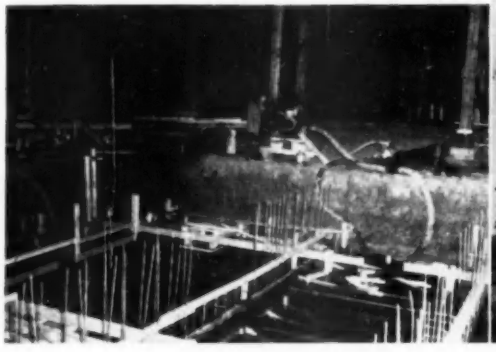
Finish Millpond in 1947

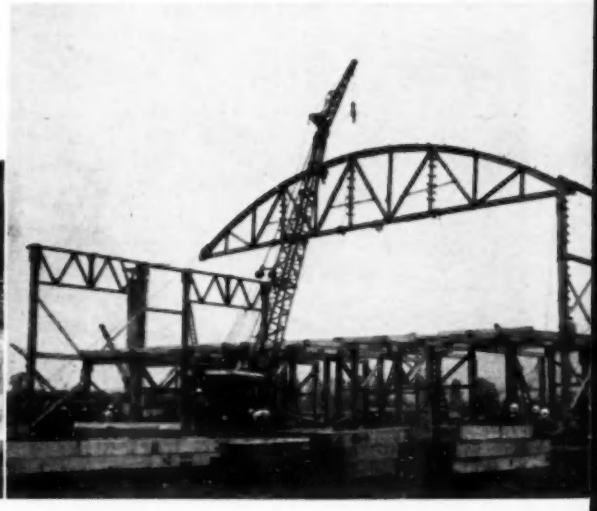
Beebe finished the millpond in Sept., 1947, the 57-acre pond finishing out from seven to 20 feet deep. It was a scraper and Tournapull job with two shovels and one D-7 and four D-8 Caterpillar dozers also on hand. Walt Durbin, Beebe job superintendent, efficiently removed 271,788 yards of material on the bid price of 24 cents per yard with four 15-yd. Super "C" Tournapulls and four LeTourneau scrapers, 20-yd., 18-yd., 15-yd., and 11-yd. Two Bucyrus-Eries, an 18-B and a 22-B, were the shovels used. They were employed both as shovels and as draglines in areas too soggy for the carryalls.

Excavation of the millpond ran smoothly, actually becoming complicated only in the classification of materials taken out. The plant site is located close to the McKenzie River and most of the excavated material was delegated for dike fills. The millpond pit consisted of varying beds of gravel and clay, making it possible to open the whole area at once. A scraperload

• Right: First steel for the sawmill building is erected by a Link-Belt Speeder 580 crane with 85-ft. boom and 20-ft. jib.

• Below: Two Homelite 3-in. and one Nova 4-in. gasoline-powered pumps were required to dewater this large foundation for machinery in the rough lumber storage building.





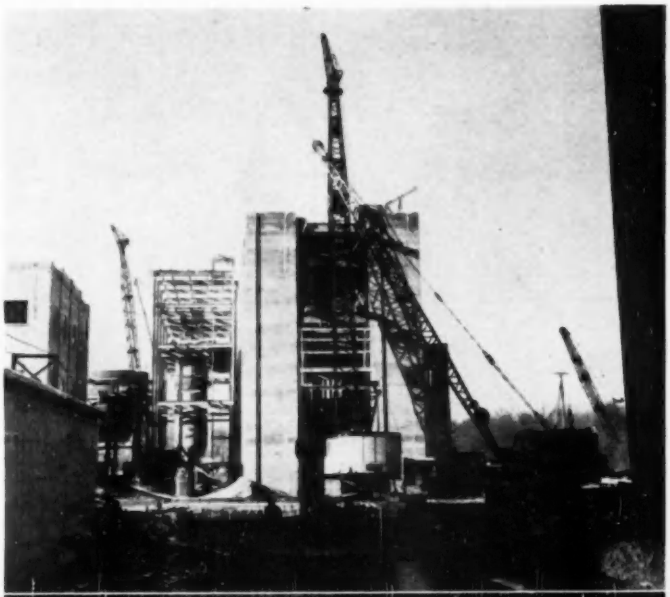
of clay was removed here and a load of gravel there, all under a careful supervision to give a proper compacting mixture for the dikes.

Although the pond was excavated through the dry, summer season, the one problem was seepage from the river into the pit. Beebe brought in a Caterpillar D-8800 engine with a Louis Allis 50-kw generator attached to power a Fairbanks-Morse 5-in. electric pump. This one pump was enough to keep the water level down. The generator was of ample size to supply additional power for floodlights needed by night maintenance crews.

From the millpond excavation Beebe placed 194,000 cu. yd. on the nearby dike embankments at six cents per yd. On the same bid of six cents per yard, 82,270 cu. yd. of millsite fill were placed. Beebe's other major excavation work while on the project consisted of 62,934 yards of millsite excavation at 24 cents per yard and 16,508 yards of miscellaneous ditching at 25 cents per yard. Ditching was accomplished mainly by the Bucyrus-Erie 18-B and 22-B, rigged as dragshovels.

Portable Maintenance Shop

Del Beebe set up a portable maintenance shop on the pondsite, his maintenance crews working at night. He used a 5-unit Alemite 2433 grease machine throughout the job, all heavy equipment always being fully greased after every eight hours of operation. The Beebe company highly praises the local Richfield Oil agent who set up a temporary filling station on the pondsite.

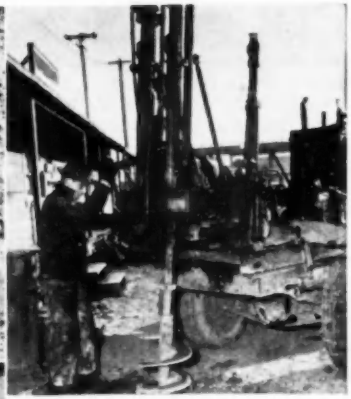


• Top: Four cranes (from left, Link-Belt Speeders 500 and 580, P & H 255-A with ¾-yd. clamshell, and Osgood 200) work around paper mill buildings.

• Above: A heavy gravel bed — up to 7,000 yards per mile — was put down on the Fall Creek hauling road to support the offroad trucks with their 50-ton loads of logs. Laying a first course here are a 5-yd. Dodge truck and a Cletrac-mounted Isaacson dozer.

• For Left: Bucyrus-Erie 22-B crane handles steel for the green chain building of the sawmill group. The highly mobile rig was active in nearly all phases of plant construction.

• Left: Construction continued throughout coldest winter weather. Here a General 307 crane erects steel tower preparatory to steel erection on a plant building.



• Economical concrete piling foundations for plant buildings were put down with this 20-in. Buda earth auger. High water table made all such work a problem.

• Above Left: In a typical cut for the Fall Creek hauling road, a 1½-yd. Bucyrus-Erie 38-B shovel loads basalt and overburden to a 10-ton Mack truck.

• Left: Mack Thermodyne dumps 10 yards of rock for a road fill.

• Below: Bridges on Fall Creek road are built with edged logs to support fast-moving logging trucks. House in background is for gatekeeper who flags off all but company personnel.

relieving the contractor from all complications of fuel supply.

The majority of the buildings — the lumber-mill buildings — are being erected by the Weyerhaeuser company itself, under the supervision of J. R. Titcomb, lumber plant manager. They were started while Beebe was excavating the millpond. The power plant is being constructed by the United Engineering Corp. of Philadelphia; the pulp plant unit, designed by O. C. Schoenwerk, Chicago consulting engineer, is being constructed by W. J. Park & Sons, Yakima, Wash.

Heavy equipment used by the Weyerhaeuser construction crews throughout the erection of the high-roofed, sawmill buildings has mainly been cranes. These are one Link-Belt Speeder 580 with 85-ft. boom and 20-ft. jibboom, one Link-Belt Speeder 500 with 65-ft. boom and 20-ft. jib and Northwest 25-D with 55-ft. boom. At the time the job was last visited, two rented cranes were also being used — a ¾-yd. General 307 and a ½-yd. Osgood 200. The ¾-yd. Bucyrus-Erie 22-B shovel owned by Beebe proved so satisfactory on the millsite excavation job that Weyerhaeuser bought it for crane work, fitted it with a Bucyrus-Erie 55-ft. boom.

Weyerhaeuser also bought the electric pumping system because of its efficient performance. It was used for large foundation excavations which because of intricate forms, had to be left open — and pumped out — for a considerable period of time.

High Water Table

The normal wet weather of the fall of 1947 brought out the one major problem encountered in the construc-

Continued on page 34

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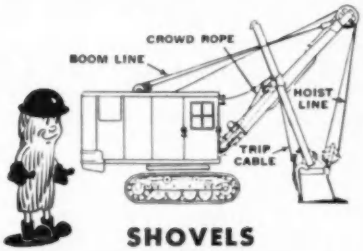

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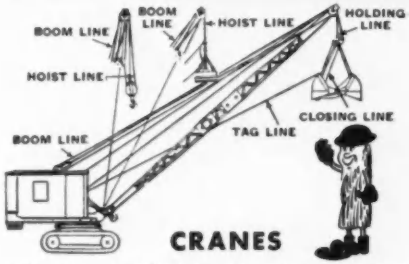
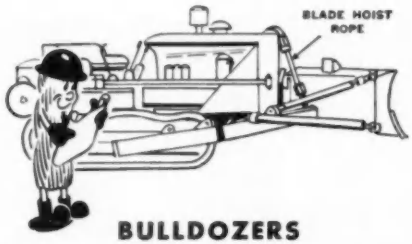
Wire rope made under J&L's quality controlled processes to give flexibility, strength and toughness on all shovel operations.



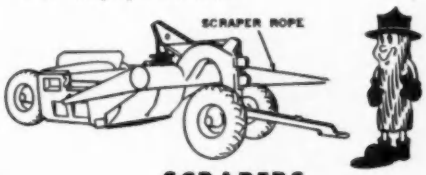
CRANES

Wire rope especially designed to meet the requirements of each application on your crane. You can get even longer wear from your wire rope through smooth operation and proper lubrication.



BULLDOZERS

Wire rope *preformed* and carefully constructed to stand up under the kind of beating it has to take on a bulldozer. J&L *Permaset* means less down-time . . . more profits.



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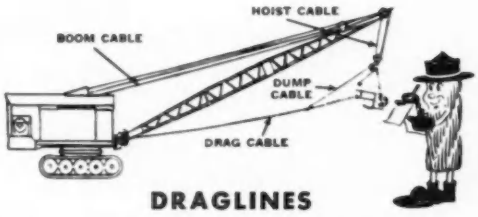
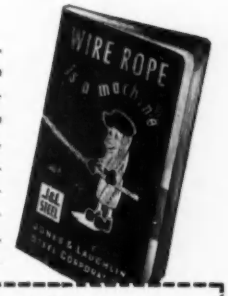


DRAGLINES

Wire rope built of coarse construction to resist abrasion on dragline operations. Get longer service life with the *right* wire rope in the *right* place.



And here's a handbook for you . . . *"Wire Rope is a Machine"*—written in a non-technical, easy-to-understand style—prepared for everyone from operators of cranes, bulldozers, shovels and draglines to contractors. It gives you a whole acre of information to help you get longer service from your wire rope on the job. The handbook is yours for the asking. Clip the coupon and send for your copy *today!*

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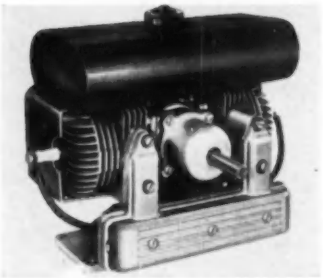
JONES & LAUGHLIN STEEL CORPORATION

Equipment You Ought to Know About

Lightweight 2-Hp Engine

Manufacturer: Power Products Corp., Grafton, Wis.

Claims: Using lightweight metals a new 2-hp #3000 air-cooled engine with



twin-opposed cylinders weighs only 23 pounds. Extremely compact—11½ x 13½ x 14½ inches overall—this little engine is suited for a wide range of portable and lightweight equipment.

The engine can be used either vertically or horizontally, and pumps can be applied with compressors, spraying equipment, lighting plants, etc. Special attention has been given to the carburetor and magneto, and the 2-hp engine starts easily and operates smoothly without stalling even at tilts up to 45°. Twin-opposed cylinders reduce vibration to a minimum.

Diesel Gum Solvent

Manufacturer: Pennsylvania Refining Co., 2686 Lisbon Rd., Cleveland 4, Ohio.

Claims: A new additive for diesel fuel and heating oils, Penn Drake "Diesel" Gumout, used in diesel engines, dissolves gum and sludge thus cleaning the fuel lines and injection system. It maintains a continuous, free flow of fuel to the engine. Any moisture which may be present in the fuel is kept from freezing. It is packaged in 5-gal. pails and in 15-, 30- and 55-gal. drums as well as 1-pt. cans.

Paver Boom

Manufacturer: Foote Co., Inc., Nunda, N. Y.

Claims: A new Highlift boom is now available for both the Singlemix 34-E and Duomix 34-E MultiFoote concrete pavers. Controlled from the operator's platform this boom can be held in any position above the ground with a vertical lift of 23-ft. bucket clearance. The paver can thus be used in such work as parapets, bridge abutments, retaining walls and footings, and walls for general building construction.

The boom will work flat and permits working under steel structures. It eliminates need for much false work and saves time in handling concrete buggies up on structures. It also makes possible feeding of pumpcrete or loading dumptors.

Aggregate Washing Plant

Manufacturer: Pioneer Engineering Works, Inc., Minneapolis 13, Minn.

Claims: The 305-W aggregate washing plant makes three sizes of rock and two of sand, scrubs as it cleans as it washes, produces 50 to 75 yards an hour, uses 300 to 500 gallons of water per minute, requires 35 hp to operate, and is simply designed from standard units and includes all framework, spouts and chutes. It has simple drives, is equipped with a mechanical feeder and is semi-portable, easy to set up or take down and easily moved. Its screens are readily changed. A central plant around which other units can be added, the 305-W requires only one-man operation. Installation cost is low.

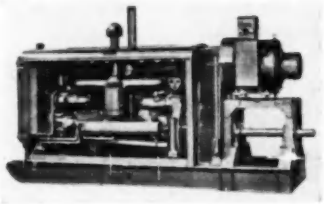
The illustration shows the flow of material through the plant.

An 8-page illustrated folder giving full details is available for the asking. Simply write to the manufacturer at the above address or visit a nearby Pioneer dealer.

Diesel Unit

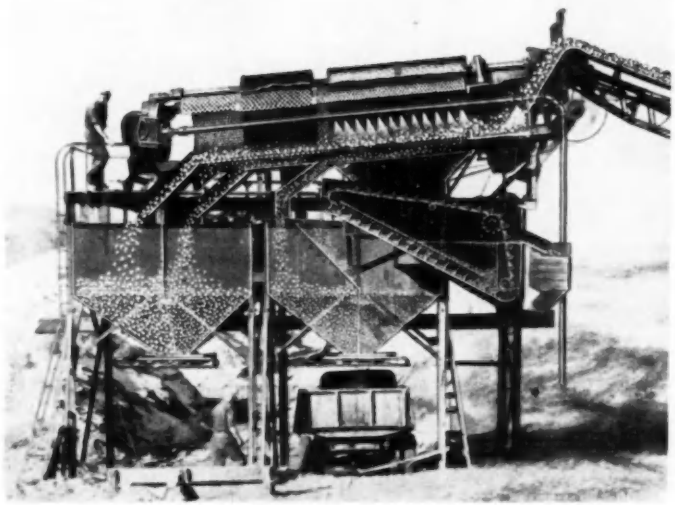
Manufacturer: Murphy Diesel Co., Milwaukee 14, Wis.

Claims: A "packaged" diesel power unit — the Mech-Elec unit — is cap-



able of providing both electricity and mechanical driving power simultaneously. Any fixed or variable proportions of mechanical and electrical loads can be handled providing the combined total does not exceed the rated capacity of the engine and the electrical load does not exceed 50 kw. Generator can be operated without engaging mechanical drive.

Two models are currently available,



Model ME-6, rated at 135 hp, continuous, 160 hp intermittent, and Model ME-66, rated at 150 hp continuous, 180 hp intermittent. Both models are equipped with 50-kw generators. The engine ratings indicate the total power available for mechanical output.

Mech-Elec units are suited for applications where the advantages of mechanical drive are desirable for the major load but where the flexibility of electric power is also desirable for secondary loads such as conveyors, blowers and lighting.

Truck-Mounted Compressor

Manufacturer: Davey Compressor Co., Kent, Ohio.

Claims: A truck-mounted "Auto-Air" 160-cfm compressor is driven direct from the truck engine through a Davey P-85 heavy-duty power takeoff, thus eliminating need for a separate driving engine. It can be mounted directly on a truck chassis or on a platform base.

Of the V-type with three low pressure cylinders and one high pressure cylinder, the compressor is 46 inches long, 67 wide and 50 high. It is adaptable to any type of truck body. Including the takeoff, the unit weighs 1,600 pounds.

Speed Transmission

Manufacturer: Seaman Motors, Inc., 305 N. 25th St., Milwaukee 3, Wis.

Claims: A selective speed transmission which provides a variation in rotor speeds is now standard equipment on Seaman Pulvi-Mixers. Addition of the selective speed transmission permits pulverization to a much greater depth, mixing of aggregate of much larger diameter, and better pulverization of stiffer clays and more thorough blending of stonier soils.

The transmission extends the use of the Pulvi-Mixer to such types of construction activities as deep treatment of sub-bases, doctoring of frost-boils, and large scale construction of macadam roads and airport bases.

Truck Tire

Manufacturer: Goodyear Tire & Rubber Co., Akron, Ohio.

Claims: The Hard Rock Rib tire in the truck tire line is being manufactured in three sizes, 12.00x24, 13.00x24 and 14.00x24. It is currently designed for front wheel service in heavy construction, excavation and strip mining. Tread design of the new tire consists of three, heavy circumferential ribs, with the shoulder pattern resembling that of the Hard Rock Lug tire. Carcass of the Hard Rock Rib is the same as that of the Hard Rock Lug.

Excavators

Manufacturer: General Excavator Co., Marion, Ohio.

Claims: General Models 310 and 312 are new ¾-cu. yd. excavators and material handlers.

The 310 (illustrated) is a crawler-mounted shovel, dragline, clamshell, crane and hoe. All the basic motions are controlled by air. Air tube clutches apply metered air power; special air seals convey air pressure through the end of the hoist drum shaft to the cylinders controlling the hoisting clutches; and a special coupling takes air pressure down through the center travel shaft to the steering clutches and brakes, eliminating binding and twisting of air pipes.

A standard feature of the 310 is its independent travel. Its heavy-duty transmission provides two speeds forward, and two reverse.

The worm-driven boom hoist unit is independent of all other motions for all types of service except shovel. On machines equipped for shovel service, where independent boom hoist is not needed, the clutch which raises the boom unit also serves as the retract clutch.

Four hook-type swing rollers of large diameter turn between flanges on the roller path, stabilizing the superstructure. A gudgeon on the crawler frame centers the superstructure on the crawlers.

The 312 is mounted on a truck-type chassis, and is available as shovel, crane, clamshell, and hoe. With exception of the travel mechanism on the superstructure, the same features are included on the 310. The chassis has a one-man type cab offset to the extreme left side.

Small Gasoline Engine

Manufacturer: Uebelhoer Bros., Inc., 848 Kensington Ave., Buffalo 15, N. Y.

Claims: Ultimotor Model 12 is an air-cooled 4-cycle engine rated at 1½ hp at 2,300 rpm to 2 hp at 3,000 rpm. Weighing only 38 pounds it stands approximately 16 inches high from its base to filler cap on a ½-gal. fuel tank.

Continued on page 48

BUCYRUS ERIE

The best buy in

22-B 3/4-YD.

38-B 1 1/2-YD.

54-B 2 1/2-YD.

excavators because...

they give you more of what you need to turn digging and lifting into profits!

you get GREATER OUTPUT

Each model is individually designed for its work range, with just the right combination of power, strength, and weight. Big cool-running clutches put the right amount of power where it's needed, are directly hand-set for greatest "feel". Low lever loads mean less operator fatigue, more passes per hour, faster pace all through the shift.

you get GREATER DEPENDABILITY

Your Bucyrus-Erie stays on the job because it's so simply constructed, so easy to keep in top operating condition. Every inch of shaft length works. Machinery is arranged for quick easy handling of lubrication and maintenance. Adjustments are simple, stay "put".

you get GREATER ECONOMY

The balanced, coordinated operating cycle that makes your Bucyrus-Erie tops in output also makes it economical to run. Repair costs are low because there's no overstressing of parts to cause trouble. Fuel costs are low because power units are "tailored" for excavator service, operate at speeds most favorable to smooth operation and economy.

you get LONGER MACHINE LIFE

Your Bucyrus-Erie works longer because it's built stronger. The steels used are developed in our own laboratories, the castings poured in our own foundries. Selective hardening and heat-treating processes are liberally used to put extra strength where it's needed. You get more years out of your Bucyrus-Erie because more years are built into it.

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Jumping Frog

Continued from page 15

back from the brow of each bench. Considerable experimentation has been done with hole centers, and operations have now settled down to a spacing of between 18 and 21 feet. If the rock were solid and more horizontal, it would be much easier to arrive at the optimum hole centers, but this rock is tricky.

The churn drills, manned by the best drillers in the locality, are both doing good work. The 29-T is regularly getting 30 linear feet of hole in an 8-hour shift, with an occasional 35-ft. performance. This includes fishing time and bailing out the occasional caves penetrated by the drill holes. Performance of the Armstrong rig varies from one to five feet per hour, depending on the hardness of rock. It generally turns in about the same footage as the 29-T.

Blast holes are being drilled to a point five feet below the quarry floor on both benches in an effort to break out clean to the toe lines. Quarry Superintendent L. S. Allsman has had quite a fight on his hands with "high bottom" at this point, however, owing to the tricky blasting condition. Explosives experts of the Hercules Powder Co. are currently working on the problem.

A possible solution seems likely with heavy springing at the bottom of these holes, and drilling of drift holes with the wagon drill all along the toe at the floor line.

Bit Wear Varies

Peculiarly enough, bit wear is much less in the hard limestone. Some of the hard shale will dull a bit in 30 feet, while the same bit will drill 300 feet through the best limestone. The same general variation is also noted on wagon drill and jackhammer work.

Roads for the churn drills are being pioneered by a Caterpillar D-6 bulldozer. This machine also cleans up the quarry floor behind loading shovels.

All jackhammer drilling is done with Ingersoll-Rand steel. Bits are shaped on the ends of the steel by an Ingersoll-Rand sharpener in the main machine shop of the cement plant. For wagon drill work, Ingersoll-Rand tungsten carbide Carset detachable bits are used. Wagon drill steel is either 6, 12 or 18 feet long, while most jackhammer work calls for only 2-ft. holes.

When the drill bits dull, they are hauled to the machine shop of the cement plant for resharpening. The Ingersoll-Rand sharpener also takes care of drill steel and the detachable Carset bits for wagon drills. Churn-type bits are sharpened on a Bucyrus-Erie No. 12 bit sharpening machine and hardened by quenching in brine. This produces a hardness sufficient to stand the beating of 50 blows per minute for as long as nine shifts.

Blasting Technique

All explosives at the quarry are supplied by the Hercules Powder Co. of San Francisco. Some bag powder is being used, but, in general, Hercomite No. 2 and Gelamite No. 1 top the list. The rock on the average requires about .8 pound of powder per cu. yd.

Extensive springing is being done at the bottom of the churn drill holes, and in some cases as many as 16 boxes of powder have been used in one 9-in. hole to permit heavy loading at the toe.

The 9-in. holes are loaded with 8x24-in. cartridges, not too tightly packed beyond the spring hole. A stick of ordinary dynamite acts as a "bomb" in each hole, and the holes are interconnected with Primacord, exploded by electric blasting caps and fired by a hand battery.

As many as half a million tons of rock have been broken up in a single blast, but recent shots have been lighter — usually around 200,000 tons. On secondary blasting work, stick powder is used with blasting caps detonated by an electric blasting machine. These shots are ordinarily made during lunch or after the end of the shift.

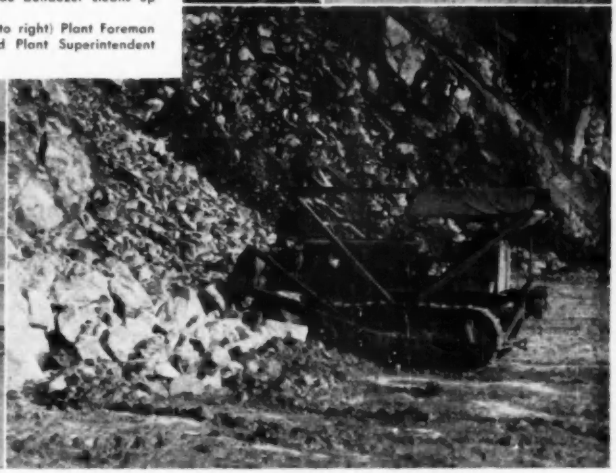
Loading and Hauling

For 16 hours each day, power shovels load the blasted rock out of the quarry. Each month these machines have to send from 40,000 to 60,000 tons down the 5½-mile road to the mill in order to keep up its output.

For loading from the lower bench which is the toughest in this quarry,

• Another view of the Bucyrus-Erie 5-yd. shovel loading blasted limestone to Gar Wood side dumps. The quarry is located in one of California's forest regions.

• Above: Autocar tractor with Gar Wood side dumps begins haul to mill.
• Above Right: Quarry Foreman L. S. Allsman (left) with E. L. Watts of Hercules Powder Co.
• Below Right: Caterpillar D-6 tractor with LeTourneau bulldozer cleans up quarry floor behind shovel.
• Below: Mill operations are under direction of (left to right) Plant Foreman M. F. Heard, General Manager A. A. Hoffman, and Plant Superintendent E. M. Barker.



the company uses a Bucyrus-Erie 120-B electric shovel with a 5-yd. manganese toothed dipper. An older 2½-yd. Bucyrus-Erie electric shovel loads on the upper level. A 50-B Bucyrus-Erie shovel is soon to be moved to this job from a recently worked-out quarry nearby.

The truck fleet is built around six new Autocar diesels each with a 40-ton Fruehauf trailer and two 12.6-yd. Gar Wood regular steel shell side-dump bodies. Each body weighs 13,000 pounds and will haul 20 tons. The total weight of each unit, including hoist, bodies, trailer and payload is 108,000 pounds.

There are also two end-dump units, both 20-ton trucks, one a Sterling, the other a Mack, both with Reliance trailers. A heavy shield on the new units protects the driver, as well as fuel and air lines, from injury during loading.

An excellent haul road is maintained between the mill and the quarry. An Adams 511 motor grader regularly dresses this road and keeps the ditches open.

In addition, the company is now using a 1¼-yd. Marion 450 shovel full time to widen out some of the narrow parts of the road. Drilling and shooting as necessary is handled by two Ingersoll-Rand Jackhamers powered by a Sullivan portable air compressor.

Material Passes Through Mill

As loads reach the plant, the rock is dumped into a 42-in. McCully gyratory crusher, which reduces it to minus 4½-in. Crushed stone then passes to a set of three Telsmith secondary crushers, which reduce it to minus ¾-in. It is then conveyed to a 25,000-ton stockpile which supplies the plant.

Since both lime and silica come from the same quarry, it is interesting to note that the 25,000-ton pile is divided into three subpiles. One pile contains nothing but high quality limestone. A second pile is a mixture of limestone with shale, thrown together because of the practical difficulty of separating them during quarrying or loading. The third pile contains shale.

Continuous chemical control is exercised by the shift chemist, beginning with this battery of stockpiles. As a preliminary guide to the proper blending of cement materials, this shift chemist gives orders to the crane operator at the stockpile to use certain specified variations in the number of buckets of material to each bin.

Crushed rock and shale are picked up from this raw stockpile by a 10-ton P & H crane with a 5-yd. clamshell bucket and transferred to the bins. A Milwaukee crane with 3-yd. clamshell bucket is also available here.

From the bins the crushed rock is fed into the raw grinding department which is divided into two identical units. In passing through one of these

Continued on page 34

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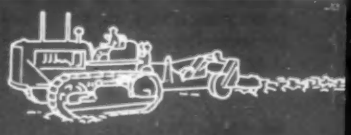

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Industrial Power

Jumping Frog

Continued from page 31

units, the feed goes first to an 8x6-ft. Marcy mill. Discharge from this mill feeds a Dorr rake classifier, the sands from the classifier going to an Allis-Chalmers Compeb mill. The fines go to a 24-ft. Dorr bowl classifier, which is in closed circuit with the secondary end of the Compeb mill. The preliminary end of the Compeb mill is in closed circuit with the rake classifier.

The overflow from the bowl classifier is, for all practical purposes, the raw material for the kilns. It has been ground so that from 88 to 92% will pass through a 200-mesh screen, averaging 10% solids and 90% water. This weak slurry goes to a Dorr 250-ft. thickener, which allows the solids to settle and the water to weir off. The resultant slurry contains 60-65% solids.

This slurry is pumped to two 20x40-ft. blending silos. Each silo is analyzed and it is then blended into the final slurry required for the type of clinker that is burned. The final slurry goes to the kiln-feed tanks and thence to the kilns.

The slurry is pumped to three kilns, two 11.25x10x240 feet, and one 11.25x360 feet. These kilns are fired by natural gas, with oil burner standbys.

Four changes occur in the kilns. Free water is first evaporated and then the combined water driven off. The limestone is calcined by driving off carbon dioxide, so that the calcium carbonate becomes calcium oxide. A reaction between lime, iron, alumina and silica then occurs, which results in a complex group of silicates known as Portland cement clinker.

The dry clinker from the kilns is temporarily stored in a pile that normally holds about 60,000 barrels of cement equivalent. A 5-ton Milwaukee crane with 3-yd. clamshell bucket picks up the clinker and feeds it to two 8x6-ft. Marcy mills. The product of the mills together with the required amount of gypsum is fed to three Allis-Chalmers 8x26 tube mills which finish the grinding. Finished cement is pumped to storage silos for sacking or bulk shipment by rail or truck. A spur line of the Southern Pacific Railroad passes the storage silos.

Finally, after its 5½-mile trip from the quarry through the mill, the finished product is ready for any one of today's many uses for Portland cement.

"That? Oh, just something the boss dreamed up to beat the labor shortage!"

England's Monster

Continued from page 19

3½ tons of welding rod. Erection absorbed 53,300 man hours and was completed late last December.

Since the 1150-B was designed to take standard U. S. A. 60-cycle power at 4,160 volts, and the nearest standard supply in England is 3,300 volts at 50 cycles, direct supply to the dragline is not possible. To overcome this problem, a complete power station has been erected just clear of the stripping area. This station is equipped with five 900-hp, 12-cylinder diesel engines each driving a 600-kw generator.

Four units are sufficient to provide the necessary operating current so that one unit is available as a standby and maintenance can proceed without interference with stripping operations. Transmission is by overhead lines connected to the dragline by the customary flexible insulated trailing cable.

After four weeks of operator training, mechanical and electrical tests, the 1150-B went to work in earnest January 25. All work on and with the Bucyrus-Erie dragline in England has been accomplished entirely by British personnel under British supervision.

Ewart Hill Deep is the name given to the area of coal being stripped in northern England. It is estimated to contain over three million tons of coal in two seams which are generally split into six or seven leaves separated by partings. Overlying rock and clay overburden reaches a depth of 160 feet, and a total of some 27 million cu. yd. is slated for removal by the 25-yd. dragline in 80-ft. strips.

Recovery of coal from the deep cuts is complicated, involving separation of various leaves and disposal of clay partings. Coal production is scheduled for 15,000 tons per week screened, graded and loaded into railroad cars.

Calapooya

Continued from page 24

tion of the buildings. Foundations had to go four to 15 feet down to rock, and the water table was found to be only two feet below the ground surface the eight rainy months of the year. John Gischel, construction superintendent for Weyerhaeuser on the job, used the Bucyrus-Erie 22-B dragshovel and the Northwest 25-D backhoe to dig the foundation pits down through the water. Fifteen gas-powered pumps, 12 3-in. Homelites and three 4-in. Novos, were used to keep the pits dry for the carpenters and concrete men. But the placing of reinforced concrete forms was a slow process in the muck and seepage.

This problem was overcome by substituting concrete pilings for concrete pads. Plans were revised on buildings which did not require wide foundation pads for wind support. A 20-in. Buda HBE earth auger, mounted on a 1½-ton war surplus truck, drilled closely spaced holes down to rock found on the average about 11 feet down. The holes, filled with concrete made 20-in. concrete pilings for the foundations. The dry kiln building, for example, is a 122 x 183-ft. tile and brick structure with 11 standard railroad tracks running through its length. The 20-in. concrete pilings were drilled and poured every 30 inches under the inner and outer walls of the building, and every six feet under the railroad tracks — a total of 1,200 pilings under that building. This was found to be much more economical than placing concrete pads down in the muck.

Placing underground pipe and sewage lines was also a difficult chore due to the high water table. On the other hand, Weyerhaeuser crews ran into a different — but just as tough — problem when they opened a ditch for a 42-in. cement-pipe sewage line that runs 10,300 feet to the McKenzie River. Coriba basalt, common to the Pacific Northwest, was found unexpectedly close to the surface in one area and this basalt was of particular hardness. At one place it required 14 hours to sink a 2½-in. handheld drill

three feet. Hercules 40% powder was used to blast the pipeline trench through the rocky area, and 2,081 yards of basalt had to be removed, bringing the sewage line far above its estimated cost.

Except for the high water table which plagued every foundation excavation that was dug in fall, winter, or spring, there have been few interruptions. At present the erection of both the lumber mill and paper mill buildings nears completion with operations in the entire plant scheduled to begin this spring. Installation of machinery was started in the lumber mill section in Dec., 1948. Machinery installations were started in the pulp paper section in January, Marvin C. Jones, formerly with the Michigan Carton Co., arriving then to assume his duties as pulp division manager.

Access Road

The plant's Fall Creek access road, nearly as important as the mill itself, was completed last October. Started at the same time as the mill, its 27-mile length was constructed to connect the Springfield plant with the South McKenzie unit, one of five timber areas in Weyerhaeuser's Calapooya tree farm. Part of the road was built by the Booth-Kelly Lumber Co., which also owns timberlands on the route. Both companies will use the road.

This 27 miles of logging road southeast of the plant is actually a first-class highway through the mountains, a thoroughfare with a heavy gravel roadbed 34 feet wide and running surface of 28 feet. Four years were required from initial surveys to completion, one and a half years for actual construction. The road required 300,000 yards of excavation, of which 90,000 were rock. Four different gravel pits were blasted open to supply over 100,000 yards of crushed rock, more than 7,000 yards of rock being laid per mile on some sections.

Construction work met the usual problem encountered in the western slopes of the Cascade Mountains where a 40 to 90-in. rainfall extends through eight months of the year. The work was pushed by both Weyerhaeuser and Booth-Kelly and by several sub-contractors working on different sections of the road, the equipment in use varying considerably. In building the largest portion of the road, the Weyerhaeuser road crew used two Cletrac FDE's with Isaacson dozers to clear the right-of-way after trees were felled by hand. One 1½-yd. Bucyrus-Erie 38-B, a ¾-yd. 22-B, and a ½-yd. 18-B, all shovels, were used for the cuts and for loading gravel trucks. Six scrapers — three 15-yd. LeTourneaus, two 14-yd. Wooldridges and one LaPlante Choate scraped out the earth cuts. Thirty dump trucks of various makes carried the gravel and fines. One International TD-18 dozer and one Cletrac and three Caterpillar 12 graders were used in finishing the roadbed.

Build Straight Road

The engineering standards used on this private, mountainous road are interesting. As road curvature reduces truck speeds, a straight road with low "rollercoaster" dips was chosen wherever possible instead of following the contours of the mountains. But uphill grades of any length for loaded trucks moving toward the mills were held turn direction toward the woods. All imum at all was specified for the rerigidly to a 1½% maximum. No maxcurves were cut and filled to give a maximum less than in Federal highway specifications. In short, the Fall Creek road was designed to move heavy loads rapidly in one direction.

Acquiring rights-of-way for a private road is more often than not a complicated, difficult task. On this road Weyerhaeuser had to find and interview all types of land owners, from private parties to state and federal agencies. About 35 ownerships were involved in the final right-of-way, the transactions requiring almost two years' time through forest lands.

Logging trucks are already hauling to the oversize millpond in anticipation of the opening of the mill this spring. The Weyerhaeuser company has purchased 13 off-road logging trucks for use on the Fall Creek road — Mack LMSW-L'S, too wide and too heavy for use on any public highway. With 105-in. overall width, 4-wheel drive, and a 290-hp Hall-Scott gasoline engine, each of these trucks can whip more than 50 tons of logs over the heavy roadbed at a fast clip.

The other four areas in the combination mill's Calapooya tree farm are at present served by county roads and a railroad spur owned by Weyerhaeuser. The farm's total of 155,205 acres will cut on an area selection basis, a checkerboard of clearings and blocks of fir trees left to seed the harvested areas. Cut in this manner the Douglas fir tree farms will yield a perpetual timber harvest on an 80-year cycle with cuttings in each area every 20 years. Like the Weyerhaeuser Timber Co., itself, which has grown from an office force of three persons in 1900 to 8,500 employees today, the combination mill at Springfield is being built and planned on a permanent basis — like its timberland it will be here tomorrow.

EUCLID SERVICE

Bottom-Dump Euclids have payload capacities of 13 to 50 cu. yds.—20 to 40-ton payloads . . . top speeds loaded up to 32.8 m.p.h. . . . powered by 150 to 275 h.p. Diesel engines.

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Ruggedly built with plenty of power and stamina, Euclids have proved their staying power on the tough jobs. First in performance—First in service...a Euclid combination that adds up to customer satisfaction.

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Your Euclid Distributor or Representative will be glad to go over your job requirements and show you how dependable performance day in and day out, plus speedy on-the-job service, keeps Euclids rolling and job profits up.

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Cleveland 17, Ohio

Rear-Dump Euclids, of 15 to 30-ton payload capacities, have body designs for low-cost hauling of all types of materials . . . wide range of travel speeds up to 35.4 m.p.h. . . . powered by Diesel engines up to 275 h.p. rating.

Move the Earth

News from the Field

Road Contract Awards Decline in 1948

Highway construction contract awards declined more than 5% in 1948 while the cost of road projects increased during the same period according to Charles M. Upham, engineer-director of the American Road Builders' Association.

Figures of the Public Roads Administration indicate that 10,206 awards covering 40,115 miles of highway construction were made during 1948, as compared to 10,825 awards for 44,918 miles of highway construction during 1947.

Due to increased costs of materials and labor, however, the total cost of the 1948 contract awards was $1,165,379,000, or $260,528,000 higher than the total of the 1947 awards — $904,851,000.

Pennsylvania continued to lead the rest of the states in 1948 in the total number of contract awards with 1,115. She was also the leader in 1947 with 1,429. Other top states for the past year were Texas, 847; West Virginia, 527; Kansas, 456; Massachusetts, 449, and Iowa, 436.

The Keystone state also led the nation in cost of projects. Pennsylvania's contract award costs for highway construction totalled $118,734,000. The five other leaders were New York, $91,949,000; Texas, $70,799,000; California, $62,990,000; Ohio, $55,906,000, and Massachusetts, $37,569,000.

In mileage Texas was far ahead of other states in planning new construction of 4,610 miles. Also high in mileage were Ohio, 2,684; Kansas, 2,249; South Carolina, 1,812; West Virginia, 1,610 and Pennsylvania, 1,519.

1948 Index Available

Copies of the 1948 index for *Excavating Engineer* are available free of charge upon request. Write to Circulation Dept., *Excavating Engineer*, South Milwaukee, Wis.

Neb. City Launches Sanitary Fill Program

Hastings, Neb., launched a modern garbage disposal program last fall to help eliminate unsanitary and unsightly dumps, since then following the latest practice in disposal: excavation of trenches, dumping garbage into them, then burying in well-compacted dirt-garbage fills.

Excavation of the first sanitary fill trench was completed in 45 hours by an International TD-14 crawler tractor with a 2-yd. Hough bulldozer-shovel, bought by the city for the new project. In addition to digging the trench, 400 feet long, 14 wide and 8 deep, initial work on the 6-acre field to be used in the fill program involved building up the shoulder of a road alongside. Seven hundred of the 1,659 cu. yd. of dirt excavated were spread and compacted into a raised fill four feet high and 12 feet wide between the road and the ditch.

This shoulder was then gravelled by a truck travelling at 45 mph dumping and spreading the gravel through an open tail-gate as it went. The firm, level strip which resulted facilitates disposal operations by permitting garbage trucks to back up to the edge of the ditch before dumping.

Dirt not used in building up the strip was stockpiled at the other side of the ditch. It is being used together with that taken from the next trench in building tightly-packed layers of dirt and garbage as the program progresses.

When the field has been entirely filled, it will be topped with 1½ feet of yellow soil, then six inches of black, and seeded with grass. Two other large fields are scheduled for use in the overall project.

Va. Highway Department Plans Training Program

The Virginia Department of Highways has announced plans for a long-range training program designed for all levels of highway field employees. The program calls for a series of on-the-job training classes held at frequent intervals in each of the department's eight highway construction districts. An annual one-week training course for administrative and supervisory personnel in each district will also be conducted.

As an unusual feature, the program provides that a number of lower bracket employees will attend the annual schools for supervisory personnel and the latter will participate in the on-the-

• Below Left: A plus 2-yd. load of dirt boils along ahead of the Hough bulldozer-shovel mounted on an International TD-14 tractor being used to excavate a sanitary fill trench for Hastings, Neb., which has launched a modern garbage disposal project. Elden Borden, garbage disposal foreman, operates the machine which pushed 1,659 cu. yd. of dirt from the first trench in 45 hours.

• Below Right: Against a background of smoke from burning refuse, Borden brings his load out of the trench. Hastings will also employ the rig to dig trenches in two other fields to be used for the project and to eliminate the dump where the garbage is seen burning.

• Sherman and Mosely, Phoenix, Ariz., used this ½-yd. Bucyrus-Erie 15-B dragshovel to clean out 16 miles of irrigation ditch near Phoenix, Ariz. The job, done for the Goodyear Tire and Rubber Co. on a cotton project, took three weeks.

job training courses for the workmen. In its early phases, the on-the-job training program will concentrate on equipment operators and mechanics. Later, it is planned to institute courses in all other phases of highway work.

Classes will last one week and will consist of between 10 and 25 men each. Instructors will be selected from among experienced employees within each district. Much of the instruction will consist of the employee actually doing the job to which he is normally assigned. In addition to practical work, the program will include demonstrations, work problems and lectures.

The training will later be supplemented by demonstrations and lectures by factory representatives of various commercial firms. Movies and training films will also be incorporated as the program unfolds.

The program was drafted by a committee of highway engineers headed by Charles B. Leech, Jr., equipment engineer for the department. W. S. G. Britton, assistant resident engineer at King George, has been named its temporary director.

Extension Course for Ky. Highway Employees

Department of Highway engineering employees are enrolling in a 72-week extension course designed to enable them to step into higher classifications within the department. Being conducted jointly by the department and the University of Kentucky Extension department, the course is divided into six sections of 12 weeks each. General mathematics, mechanics, strength of materials, stresses, steel design and reinforced concrete design will be covered.

Upon completion of all six sections each student will be awarded a certificate by the University Extension department. No college credit is being given.

At present, the course is available to all engineering employees of the central office. Plans are under way to set up a similar course for engineers in the nine highway districts.

Complete Excavation On United Nations Site

Excavation operations at the United Nations site in Manhattan, New York, were completed late in February, a month ahead of schedule. (See "UN Headquarters in the Making," *Excavating Engineer*, Feb. 1949, page 26.) More than 215,000 cu. yd. of earth and rock have been dug from the 17-acre tract by Fuller-Turner-Walsh-Slattery, Inc. Work was begun Sept. 14, 1948.

Under a contract with the UN, the corporation of four contractors will also build the Secretariat building and lay the foundations for the General Assembly and the meeting hall area.

Excavate Below Street Level

Excavators have dug and blasted their way down to 31 feet below street level to a general grade of four feet above mean sea level. They removed 150,000 cu. yd. of earth and 65,000 cu. yd. of bedrock. A good portion of the better material has been stockpiled on the lot for future use as backfill. Some 30,000 cu. yd. of the poorer ma-

• Suspended during the war, operations on New York's Brooklyn Battery Tunnel are again in full swing. Mason & Hanger Co., New York, is boring two tubes, each to accommodate two lanes of traffic, with portal-to-portal length of more than 9,000 feet. The roadway, which will reach a maximum depth of 115 feet below the surface of the Hudson River, is designed to carry 15,000,000 to 16,000,000 vehicles annually at capacity. In the photo, a Lorain 41 crane lowers tunnel segments into a construction shaft.

terial were loaded on barges for dumping while the remainder was used as fill at Randall's Island and La Guardia Field.

The vast number of complications arising in excavating within a metropolitan area was encountered at the site — a network of utilities, including sewers, water mains, gas lines, electric cables and telephone lines had to be maintained and protected during operations. Many of the facilities had to be temporarily supported or by-passed to permit the work to go forward. A ventilation shaft for the Queens subway also crosses the lot and had to be underpinned and protected to rock during blasting.

Foundations Underway

Sporadic blasting is still going on where men are engaged in line drilling. Pouring of the mass concrete foundations has already been started in some places, with men working in two shifts. The foundations will vary in thickness according to the weight and height of the structure to be supported. Ten-ft. square sections of concrete to an average depth of 13 feet below sea level will support the Secretariat. They will rest on bedrock.

Elsewhere, principally in the filled-in area that was formerly an inlet of the East River called Turtle Bay, the depth to bedrock varies from 20 to 90 feet. Here, steel piling driven to the rock will support the foundations of the General Assembly and the meeting hall area.

The concrete foundations will be topped by I-in. cement waterproofing on which will rest grillage steel — I-shaped beams. Steel superstructure for the buildings will be attached to these beams.

Arkansas Approves $30 Million for Roads

Three bills providing for a highway maintenance and construction program, expected to amount to at least $30 million annually in the next two years, have been approved by the Arkansas Legislature. The bills appropriate almost $8 million for annual maintenance, $12 million for construction and $12½ million for Federal highway funds.

In addition to regular revenues, the legislation authorizes expenditure of money to be received from the annual sale of $7 million in new highway bonds. Arkansas voters recently approved a $28 million highway bond issue to help finance an $80 million highway construction program suggested for the next four years by Gov. Sid McMath.

The bond proposal stipulated that the bonds would be floated in four annual issues not to exceed $7 million each, rather than in one lump issue. Maximum interest on the bonds was set at 3.2%.

Governor McMath had warned that if the bonds were not approved, gasoline taxes would have to be increased to finance highway improvements or the state's road system would continue to deteriorate. There was little organized opposition to the bond program.

Asks $1 Billion Yearly In Federal Aid

Charles M. Upham, Washington, D. C., engineer-director of the ARBA, recommended that Federal Aid authorizations be increased to at least $1 billion annually to assist the states in the nation's badly-needed highway program. He spoke at the 36th annual meeting of the Wisconsin Road Builders Association in Milwaukee.

Such an authorization would be double the highest previous amount authorized for Federal Aid highways — $500 million a year under the Federal Aid Highway Act of 1944. The Federal Aid system includes 624,000 miles of the nation's important highways.

By the end of the war, deficiency in highway construction approximated

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● Your dragline is really equipped for big yardage when it's equipped with a Red Arch bucket! That's because Red Arch buckets are scientifically designed for fast loading, smooth carrying and clean dumping. Sharp cutting teeth are set at just the right angle . . . the high red arch lets material flow in or out without obstruction . . . the interior has no projections to catch and hold dirt. It's a ruggedly built unit, too, with an alloy steel body rigidly braced for hard service, well balanced to carry heaping loads in a fast swing. Built in three types to fit job requirements, in sizes from ⅜ to 30 cubic yards.

$22 billion. A survey by the Federal Works Agency indicates it will cost $60 billion over a 15-year period to get highways in shape to handle present and future traffic. The rate would be $3 billion annually in new construction and $1 billion in maintenance.

The only method of counteracting the "feast and famine" road building psychology of the past, Upham stated, is by planning and carrying out a long-range construction program. He stated that a billion dollars a year in Federal Aid for at least three years plus matched funds and the added construction expenditure at state and local levels would approximate the required $3 billion program.

He blamed the series of starts and stops in highway construction in this country on the depression and World War II. He stated that "lack of planning" however, was the main reason for the violent fluctuations in highway work in the past.

Radioactive Piston Ring Tests Predict Benefits

Experiments with piston rings made radioactive in the uranium chain-reacting pile at the Oak Ridge national laboratory at Oak Ridge, Tenn., forecast wide benefits in time to operators of motorized equipment. The California Research Corp., a subsidiary of the Standard Oil Co. of California and the Isotopes division of the Atomic Energy Commission, said in a recent joint announcement that the corporation's research staff is successfully using radioactive piston rings to test the effect of fuels and lubricants on engine wear.

The announcement claimed that with radioactive rings in an engine, the amount of wear can be measured by an extremely simple method. In spite of the simplicity of the test, it is so delicate that as little as one millionth of an ounce of metal worn from the rings can be detected.

Results of these tests have brought the prediction that in time operators of motorized equipment will realize benefits from these experiments in the form of lower engine repair and maintenance costs through improved fuels and lubricants.

T. Southworth Inaugurates Air Service Program

"Service out of the blue" became a reality for heavy construction contractors in the major mountain and river areas of eastern New York and western Vermont and Massachusetts, when the T. Southworth Tractor and Machinery Co., Inc., of Albany, N. Y., inaugu-

7 reasons why LaCROSSE is a better buy!

1 **More Load Space** — Flat-top La Crosse gooseneck provides extra space for carrying small tractor, mixer, etc. on same trip with shovel or other bulk load.

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6 **Stronger Axle** — Exclusive La Crosse axle is 1.4 times stronger than heaviest truck axle . . . also is cambered slightly to keep trailer tires "in tune" with crown of road.

7 **Wide Selection** — Choice of single, dual or tandem axle models from 8 to 67-ton capacity . . . also 6-10 ton tilting trailers . . . flat top highboys . . . custom-built trailers for special hauling problems.

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Low-Cost TRAILER TRANSPORTATION

rated its service-by-air program recently.

The program, designed to keep pace with the demands of heavy construction operations, is under the personal direction and supervision of T. C. Southworth, former Air Force pilot and general superintendent for the distributing firm.

"The results so far have been more than gratifying," says Southworth. "We are convinced that prompt, on-the-spot service of job-trained mechanics and genuine replacement parts is the answer to heavy losses from idle men and machines."

Occasionally, the Southworth Co. receives an emergency call for a part that is temporarily out of stock. The part is located by phone, Southworth flies to the source, has the part on the job in a matter of hours or minutes. Before, it was often days and weeks. Emergency trips have been made to points on the Atlantic Coast from Virginia to Maine, and from Boston to Buffalo.

F. H. McGraw & Co. Elects New Officers

F. H. McGraw & Co., national engineering and construction firm with offices in Hartford, N.Y., Chicago and Pittsburgh has three new officers. Urban D. Gosselin, formerly assistant to the president, Clifford S. Strike was elected vice-president; Harry W. Mathews, veteran McGraw project manager, assistant to the president; Frank J. McClean, former secretary controller. All three have been associated with McGraw for nearly 14 years.

Gosselin and McClean will continue to work out of the Hartford office covering such company projects as the Coosa River Newsprint plant, Childersburg, Ala., Pacific States Cast Iron Pipe Foundry, Provo, Utah, and the modernization of Gary Sheet and Tin Mill, Gary, Ind.

Mathews, construction superintendent on the $12 million coal preparation plant being built for Jones & Laughlin at East Fredericktown, Pa., will remain on that project until it is completed and ready for operation this summer.

HOW TO SELECT A CLAMSHELL BUCKET

Buy a bucket that uses full crane capacity

Maximum return on your crane investment depends upon selecting the clamshell bucket that will utilize full crane capacity. First determine the *allowable gross load capacity* of your crane, available *closing line pull*, and *cable sizes*. Check the *character of the material* to be handled . . . weight per cu. ft., size and shape of pieces, compaction, etc.

Then select the *type* and *weight* of bucket that will result in the greatest possible tonnage from your crane equipment.

Careful bucket selection and consideration of service requirements will enable you to establish a higher ratio between bucket performance and payload. Blaw-Knox can give you the engineering service that makes proper bucket selection possible, and suggest correct use of the proper accessories to adapt your Blaw-Knox bucket to peak efficiency on your operations.

Send for Catalog 2076 for profitable bucket selection suggestions.

TYPICAL EXAMPLE OF CORRECT BUCKET SELECTION

PROBLEM . . . To dig narrow trenches 3' wide	
Maximum weight of material	100 lbs. per cu. ft.
Crane capacity at required working radius	5800 lbs. per cu. ft.
Size of cable	¾"
Trench bracing spaced approximate 8' centers	
SOLUTION . . . Select narrow "hard digging" bucket, size 671	3100 lbs.
Add B counterweight	230 lbs.
Add standard teeth	150 lbs.
Add side and corner teeth	122 lbs.
22 cu. ft. load at 100 lbs. per cu. ft.	2200 lbs.
Correct total maximum load	5802 lbs.
Correct cable	¾"
Correct bucket with side cutter teeth	2' 8"
Correct open length 7' 1" to clear trench bracing	

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BLAW-KNOX CLAMSHELL BUCKETS
THE MOST COMPLETE RANGE OF SIZES AND TYPES

Okla. Scores Record For Highway Construction

Oklahoma's highway construction hit an all-time production record for the 2-year period beginning Jan. 1, 1947, and ending Jan. 1, 1949. During that time contract primary road construction and replacements reached 6,069 miles and farm-to-market road construction, 1,551 miles. The total 7,620 miles, represents an investment of $57,154,770.80.

The report shows 1,167 miles of primary roads and 368 miles of farm-to-market roads under construction at the close of 1948. Contract price of the former is $13,440,831.41 and the latter, $3,522,913.30 or a total of 1,535 miles contracted for $16,963,744.71.

The record does not include the more than $8 million expended in the 2-year coverage on replacement projects carried on by the state's own crews. In 1947 this maintenance totalled $3,764,663.68 and in 1948 it reached $4,435,939.39.

The board also agreed to suspend its program of building wayside parks for the rest of the year except where those projects are underway. The board voted, too, to advance counties funds for rights-of-way purchase only if the counties can pledge repayment during the current calendar year. Both moves are intended to make the maximum amount of funds available for road and bridge construction.

Maine Continues 6-Cent Gas Tax

Gov. Frederick G. Payne has signed into Maine law a bill continuing indefinitely a 2-cent gasoline tax increase enacted on a temporary basis two years

ago. Without the new legislation, the 2-cent levy would have expired Sept. 1, 1950.

The 2-cent tax, which brought the total state gasoline excise to six cents a gallon, is expected to produce about $3,800,000 a year.

Besides continuing the tax at the 6-cent rate, the new legislation also shifts to the state $443,000 in municipal cost of state and state-aid highway maintenance expenses and allocates to communities an additional $300,000 for state-aid road construction.

Highlights of Annual AGC Convention

A potential record-breaking volume of $183¾ billion in new construction and an additional $6 billion in maintenance and repair operations were predicted by Managing Director H. E. Foreman in his annual report to the 30th annual convention of the Associated General Contractors of America in New York. His report summarized accomplishments of the year for the association which represents more than 5,000 of the nation's leading general contractors with more than 100 chapters in the country.

Foreman told the group that in order to bring about conditions under which contractors can operate most effectively and have the benefit of the experience and thinking of others with the all-around result of improving services in the construction industry, the AGC is undertaking a broad scale program of cooperation with professional societies, trade associations and government agencies related to the field.

Groups included in the program are the American Institute of Architects, the ASCE, American Association of State Highway Officials, AED, and the National Association of State Aviation Officials.

Cooperation In National Defense

"In cooperation with the Corps of Engineers, members and chapters are helping to sponsor, recruit and train 100 Army reserve construction units as part of the Department of the Army's affiliation program. So far 86 of these units have been sponsored and 74 have been activated," Foreman stated. "These units will be available for immediate mobilization in the event of a national emergency. Each man is specially fitted for his Army assignment by his civilian employment. When mobilized to full strength 100 units would total almost 60,000 officers and men."

The AGC was also told by Foreman of cooperation with the Navy Department in recruiting reserves for Seabee construction battalions. He also re-

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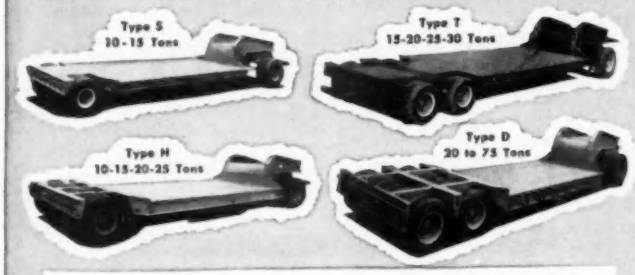

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ported that the association is cooperating with the Industrial College of the Armed Service, the National Security Resources Board, and others in planning for mobilization of the general contracting industry in the event of an emergency.

The tide of increasing labor and material costs against which the construction industry has been fighting since the war's end has at last turned in its favor, Guy C. Kiddoo, vice-president of the First National Bank of Chicago, told members at another meeting. With the tremendous volume of construction in highways, housing, public works and institutional building which this country will need in the years ahead there will be enough work to keep all contractors reasonably busy, said Kiddoo. "The contracting business is very largely depression proof."

Caution should be used, however, in judging future direction of costs in contract bidding, for there is a possibility that current downward business trends may accelerate enough to reduce new private construction below present estimates, he warned. He also pointed out that costs have currently put new homes beyond the reach of those who need them most, emphasizing that the construction industry must broaden the market for its services.

Kiddoo told the contractor members that there is little likelihood of any

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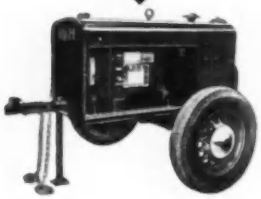

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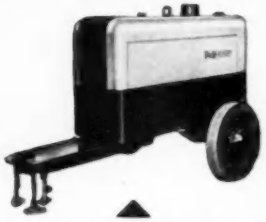

WN-300 range 30 to 375 amps water-cooled gasoline engine. This efficient unit available in 2 and 4-wheel mountings.

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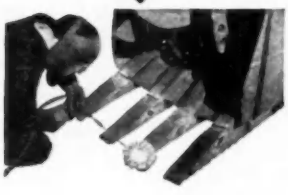


reduction in hourly wage rates. Instead, he said there are some further increases in prospect.

Taking a representative sampling of figures from contractor's statements, he showed some of the percentages of profit after taxes. They were from 1.8% to 6.2% for road contractors; from 1.2% to 12.9% for contractors in the mechanical trades, and from 0.2% to 16.66% for general contracts. Samples of the profits from heavy engineering contracting were not comprehensive enough to make a fair judgment in that field, he said. He stated that these figures indicate that contractor's profit margins are too small rather than too great.

Hospital Construction

At another meeting of the contractor members, George L. Read, chief construction engineer, Division of Hospital Facilities, U. S. Public Health Service said that over $400 million in construction have been approved under the Hospital Survey and Construction Act since its passage in 1946. About 20% of the projects approved are already under contract and a few are completed.

The purpose of the program is to assist states in providing hospitals and health centers. It requires state surveys of actual need, stressing long range planning and comprehensive state development plans, also authorizing Federal Aid and providing for state administration of the program within the state. He emphasized that the Federal role is largely that of guidance, with the state and communities doing the final administrating.

Bids for construction are obtained and contracts are awarded by the sponsor who may be the state or any public or non-profit agency, following the well-established pattern of owner-contractor relationship. The government or state agency is never a party to the contract, emphasized Read. When the Hill-Burton Act was prepared it was decided to employ lump-sum type of contract and competitive bidding.

Read told the members that in order to achieve a decentralized approach to the program, work is largely done through the regional offices of the Public Health Service.

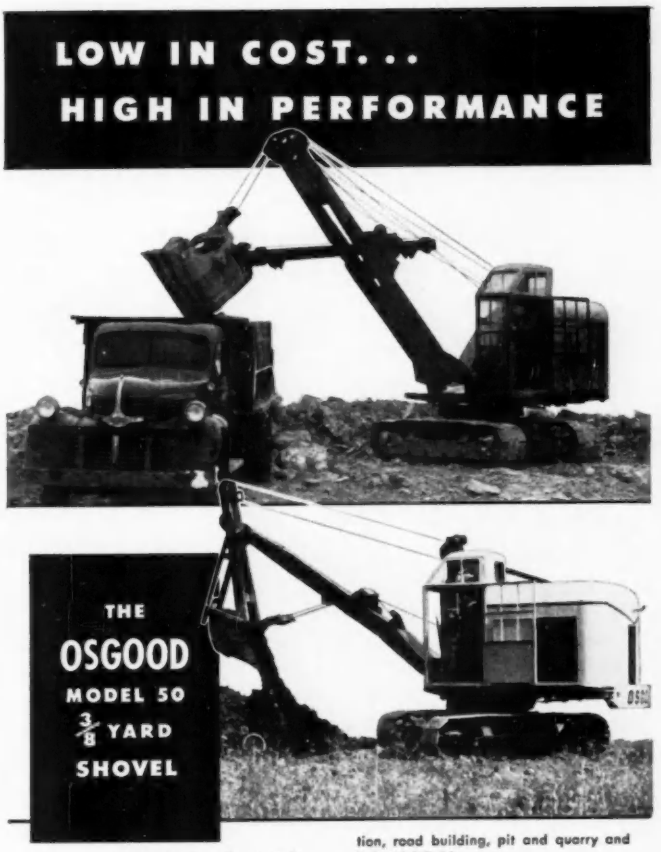
Government funds, which consist of one-third of the total cost of each project, are paid through the state agency to the owner on the basis of work performed, Read said. State inspectors determine the amount of Federal installments due the owner.

Safety Awards

Seven safety awards and numerous certificates were presented to member firms which finished in leading positions in the annual AGC accident prevention contest for the year ending Sept. 30, 1948. Two first prizes went to companies in each of two classifications, first, above average man-hour exposure, and second, below average, in the three industrial divisions—Building, Highway and Heavy.

In the Building division where the average exposure was 397,456 man-hours, E. J. Cross Co., Worcester, Mass., won first place in the first classification; Thomas H. Bentley & Son, Inc., Milwaukee, Wis., in the second. Second and third place winners in the first classification were Bryant & Detwiler, Detroit, Mich., and Wermuth, Inc., Fort Wayne, Ind., in the second, Faulkner Construction Co., Ferndale, Mich., and the Lovering Construction Co., St. Paul, Minn.

First prize in the first classification for the Highway division went to Burrell Construction and Supply Co., New Kensington, Pa., with second and third places being awarded to Koss Construction Co., Des Moines, Iowa, and A. J. Baltes, Inc., Norwalk, Ohio. In the second grouping, Thorpe Construction Co., Akron, Ohio, won first place while George K. Werner & Son, Clay Center, Neb., and Diesel Oil Sales Co.,



A rugged, versatile, and dependable performer at low cost—that's the OSGOOD Model 50. Its simplicity of operation, easy maneuverability, and full convertibility to all attachments provide outstanding performance in the construction, road building, pit and quarry and industrial fields.

Available as shovel, crane, hoe, dragline, and clamshell. Equipped with OSGOOD patented wire rope crowd and automatic retract.

Write for complete details.

POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS

THE OSGOOD CO. O-G THE GENERAL CO. EXCAVATOR

MARION OHIO

DIESEL, GASOLINE OR ELECTRIC POWERED • ¾ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

Seattle, Wash., took second and third. The average exposure was 293,880 man-hours.

The Heavy division's first prize in the first classification was won by Holmes Construction Co., Wooster, Ohio, second and third prizes in this group going to C. F. Braun & Co., Alhambra, Calif., and Fluor Corp., Ltd., Los Angeles, Calif. First prize winner in the second classification was C. F. Lytle & Amis Construction Co., Cambridge, Neb. Second prize in this grouping went to L. Walker Fauber, Ashland, Ohio, and third to Herbert F. Darling, Williamsville, N. Y. Average exposure was 839,525 man-hours.

All first place winners in these three divisions won AGC plaques.

Special Awards

Cross Co., donor of a special prize for the best record in the New England division, again won the award. Volpe Construction Co., Malden, Mass., finished second, and H. P. Cummings Construction Co., Ware, Mass., third.

Special mention was made of the chapters with the largest number of participating members. Among the large chapters, Detroit was first, the Pennsylvania Builders Chapter, Harrisburg, second, and the Constructors Association of Western Pennsylvania, Pittsburgh, third. Among the small chapters, Milwaukee took first, St. Louis, second, and the Ohio Highway Chapter, Columbus, third.

Six member firms were also cited for having the best records among firms which competed in all accident prevention contests in the past five years.

First in the group with above average exposure was the Newbery Electric Corp., Los Angeles, Calif., and Phoenix, Ariz., while first place in the below average exposure group went to the Thorpe Construction Co., a first place winner in the 1948 contest. The other four were Fluor Corp., the A. L. Jackson Co., Chicago; Martin L. Bauer Construction Co., Middletown, Ohio and Ferry Construction Co., Atlantic City, N. J.

Seventeen firms also won special certificates for having no lost time accidents. In this way special recognition was given to organizations with relatively small man-hour exposure.

Elect Officers

The 4-day convention wound up with the installation of Adolph Teichert, Jr., president of A. Teichert & Son, Inc., Sacramento, Calif., as 1949 president. Teichert, who was vice-president last year, succeeds Dwight W. Winkelman, president of the D. W. Winkelman Co., Syracuse, N. Y. New vice-president is Walter L. Couse of Walter L. Couse & Co., Detroit, Mich.

Newly elected AGC directors include J. W. Brennan, Brennan & Cahoon, Inc., Pocatello, Idaho; J. G. Bartholomew, J. G. Bartholomew Co., Dallas, Tex.; Chester W. Cunningham, Condon-Cunningham Co., Omaha, Neb.; Cecil D. Bartholow, W. E. Bartholow & Son Construction Co., Huron, S. D.; Walter H. Ericsson, Henry Ericsson Co., Chicago; Fred I. Rowe, W. L. Johnson Construction Co., Columbus, Ohio; Max C. Harrison, Harrison Construction Co., Pittsburgh, Pa., and Albert D. Blakeslee, C. W. Blakeslee & Sons, Inc., New Haven, Conn.

Re-elected directors were Charles L. Harney, Chas. L. Harney, Inc., San Francisco; Edward O. Earl, San Xavier Rock & Sand Co., Tucson, Ariz.; Carl E. Nelson, Carl E. Nelson Co., Logan, Utah; W. D. Amis, Amis Construction Co., Oklahoma City; George C. Koss, Koss Construction Co., Des Moines, Iowa; Charles A. Long, Sullivan, Long & Hagerty, Birmingham, Ala.; F. L. Shackelford, Potter & Shackelford, Inc., Greenville, S. C.; R. P. Bayard, Johnson, Drake & Piper, Inc., New York City; S. L. Fuller, John F. Casey Co., Pittsburgh, and Hal C. Dyer, Dallas, Tex.

4 Machines in 1

. . . HYSTAWAY makes possible not just a track-type tractor, but a bulldozer, dragline, clamshell and crane as well. Because the crane can easily be installed in 1 hour and removed in a half hour, the HYSTAWAY may be a crane in the morning, a bulldozer in the afternoon. It retains full unrestricted oscillation of the tractor crawlers over any ground surface, yet track rigidity may be accomplished by a crank control at the masthead. Operation is simple and conventional.

HYSTAWAY is available for the "Caterpillar" D6 and D7 tractors. Optional equipment includes manganese steel dragline buckets, tagline, jib boom and boom extension sections.

HYSTER is another of the famous tried and proven construction products we distribute and service in the major mountain and river areas of Eastern New York.

T. Southworth TRACTOR & MACHINERY CO. INC

Telephone: Albany 5-5255

Glenwood Road Menands, N. Y.

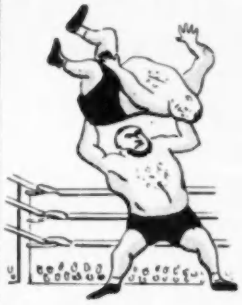
Fla. Adopts 1949 Road Budget of $44½ Million

Florida's State Road Department has adopted a construction and maintenance budget for 1949 listing expenditures of $44,588,807, an increase of approximately $3⅓ million over the tentative budget drafted at an earlier session. The department's total working budget for the year will be $55,840,680, compared with the tentative figure of $52,406,779. This overall figure includes such items as accounts payable, reserves, administrative costs and rights-of-way acquisition.

The maintenance budget for this year was increased from the tentative figure of $5,536,795 to $5,822,255.

A deficit of approximately $1,600,000 under anticipated income is contained in the new budget. Chairman Alfred A. McKethan explained that this apparent deficit will be "written off" by the end of the budget year in the form of carried-over contracts or work contracted for but not completed in the current year.

The final tabulations added about $2 million to the anticipated revenues for this year. $1,049,097 was added to Federal matching funds and $850,562 of county surplus gasoline tax funds, anticipated but not previously budgeted, was allocated.



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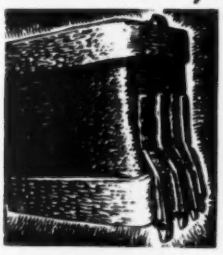
(Trade Mark Reg. U. S. Pat. Off.)

11-13½% MANGANESE-NICKEL STEEL

HOT ROLLED PLATES

get TOUGHER every day!



Heel and Lip repaired with Manganal Hot Rolled Plate

Chute and hopper liners, power shovel and dragline buckets, conveyor flights, etc., repaired with Manganal Hot Rolled Plates often outlast new ones . . . because Manganal actually grows stronger in use. Workhardens under impact and abrasion to 550 Brinell. Hot rolled plates are easier to work with, too. Can be punched and sheared, formed hot or cold. Sizes ¼" to 1" thickness, 48" x 120" or 144". Tensile strength up to 150,000 p.s.i.

● Write for your FREE copy of the "MANGANAL MARKETER".

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SOLE PRODUCERS

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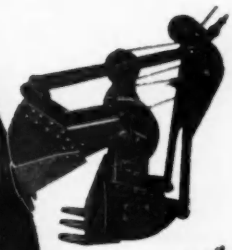
NAME OF NEAREST DISTRIBUTOR ON REQUEST

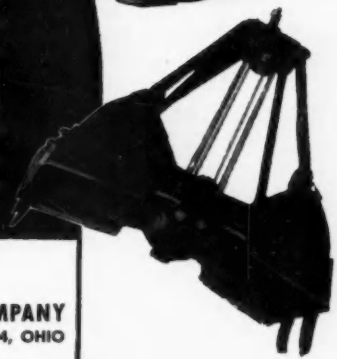
LIGHTER

STRONGER

WELLMAN

Williams Type BUCKETS





Stronger because they're constructed of **welded rolled steel**... *lighter* because non-essential weight has been eliminated. Wellman buckets meet every requirement of heavy service with longer life and lower cost! A type for every service: Multiple Rope, Power Arm, Dragline, Power Wheel, Special Service. ⅜ to 16½ yd. capacity.

SEND FOR BULLETIN

THE WELLMAN ENGINEERING COMPANY

7002 CENTRAL AVENUE CLEVELAND 4, OHIO

New Equipment

Continued from page 27

Its assembly employs aluminum in the cylinder head, connecting rod, ribbed crankcase and a 3-ring piston. The bore measures two inches, the stroke 2¼ inches. The piston displacement is 7.07 cu. in.

Ignition is provided by a high-tension flywheel type magneto with dust shield. Controlled by a centrifugal-type governor adjustable to full power range, with provision for cable control, Ultimotor Model 12 is lubricated by a splashed oil system, combined with a patented centrifugal oil slinger. The engine features angular valves for higher compression (6.13 to 1) and a built-in flywheel puller to remove flywheel without special equipment. The shaft rotates counter-clockwise when facing the output side.

Parts Cleaning Unit

Manufacturer: Keliher Co., 6124 Forest Park Rd., Dallas, Tex.

Claims: Turbo-Blast cleans engine blocks, piston rods, shock absorbers and other mechanical parts in 15 minutes, according to its maker. Grease-encrusted parts are placed in the Turbo-Blast drum which contains a detergent heated to the proper temperature. The Turbo-Blast impeller turns at 1,300 rpm to 1,750 rpm (depending on model size). A tremendous turbulence is created and the cleaning agent is forced into crevices of the parts being cleaned. After an average of 15 minutes, parts can be removed and rinsed. Additional handling is eliminated.

Turbo-Blast is available in two standard models: 36-A for large parts or a large volume of small parts, and 18-A for the cleaning of parts up to 16 inches in diameter. With the larger model, natural or manufactured gas can be used with the atmospheric torch type heater furnished as standard equipment. A 5-hp motor is used. The smaller model is heated electrically and is powered with a ¾-hp motor. Custom models are being built for tractor engines. Where gas is not available for heating, a pressure type kerosene or fuel oil burner of standard manufacture can be furnished.

Hardfacing Alloys

Manufacturer: Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.

Claims: A complete new line of 15 hardfacing alloys divided into three primary groups—ferrous alloys, cobalt base alloys and tungsten carbide—are now available. They are especially recommended to combat abrasion, impact, heat and corrosion.

In order to stimulate introduction of this group of alloys, the manufacturer is making a special offer of a trial assortment containing a sufficient quantity to assure an adequate performance test. The assortment consists of the new Aircolite hardfacing alloy recommended for equipment subjected to severe abrasion and medium impact such as pulverizer hammers and core crusher rolls (for oxyacetylene and electric arc application); and the new Airco self-hardening alloy for equipment subject-

ONE MAN----- ONE MACHINE

Cheapest Way TO DIG & CONVEY

Above picture shows a typical setup of a Sauerman Slackline Cableway handling a deep sand and gravel excavation. Operated by one man, the cableway bucket scoops a heaping load of material from under water, lifts and conveys the load at a speed of 600 f.p.m. and dumps into a hopper on top of the aggregate plant, then returns by gravity to the digging point. Swinging in a wide arc, the machine is able to move a huge yardage at one setup of the mast.

- Manpower conservation—important for profitable production—is a major economy with Sauerman Slackline Cableways.

One, easily trained man handles the entire operation of digging, conveying, elevating and dumping.

Sauerman Slackline Cableways are designed for digging deep in any kind of ground—wet or dry—loose or hard-packed—for dragging material from pits, ponds or rivers and lifting to a high delivery point. Power consumption, either gasoline, electricity or Diesel, small on basis of tonnage handled. Upkeep simple—initial cost low.

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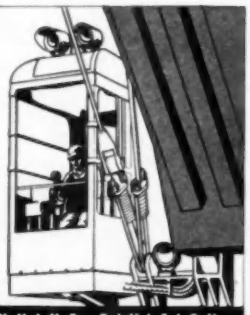
SAUERMAN BROS., INC.
574 S. Clinton St. Chicago 7, Illinois

STURDILITE The HEAVY-DUTY FLOOD LAMP
Lights Your Work Better • At LESS COST...

SPECIALLY ENGINEERED and designed for efficient, long-lasting service on Shovels, Excavators, Draglines, Road-building Equipment, Locomotive Cranes, Tractors. Sealed-beam unit provides extra high light intensity and spread. Entire assembly mounted on shock-proof rubber insulated base to absorb vibration. STURDILITE is specified as a standard accessory on leading makes of equipment. Available in 4-6; 12-16; and 110-120 voltages.

WRITE for detailed specifications, illustrated Bulletin, and prices.



PHOENIX PRODUCTS CO. METAL SPINNING DIVISION
4723 N. 27th Street, Milwaukee 9, Wisconsin

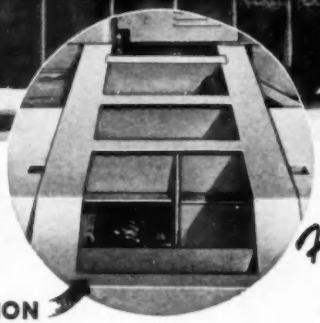
WAYNE CRANE *Announces the* NEW MODEL 44 TRUCK-MOUNTED "*Corsair*"

TRUCK SPEEDS ON THE HIGHWAY *Plus* POWER AND TRACTION FOR OFF-THE-ROAD WORK

Truck-mounted WAYNE CRANE CORSAIR travels at truck speeds . . . enables you to work a large territory profitably . . . eliminates loading time and expensive crane hauling equipment. CORSAIR is easily convertible, too . . . just the machine for the owner who wants to cover a full job range.

CAPACITY

½-Yard Shovel, Trench Hoe, Dragline, Clamshell; Also Magnet, Pile Driver or 10-Ton Crane.



Special HEAVY-DUTY CARRIER CONSTRUCTION

(Engineered for Crane Service)

The CORSAIR truck carrier is specially built for heavy construction work . . . is designed throughout to provide maximum stability, rigidity and boom clearance.

• CRANE FEATURES •

Fast, 5½ r.p.m. Swing • Enclosed Gears Running in Oil • Oversize Clutches, Drums and Shafts • Full-Vision Safety Cab • Worm-Driven Boom Hoist • Anti-Friction Bearings Throughout

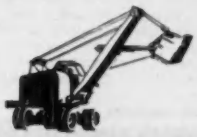
Here's why "CORSAIR" IS TODAY'S TRUCK-CRANE BUY:

MOBILITY—Truck speed between jobs assures more productive hours per day. Auxiliary transmission—10 speeds forward, two reverse.

POWER—CORSAIR offers tandem drive, 8-tire or 10-tire traction—has special differential lock for heavy, off-the-road work.

VERSATILITY—Converts easily to Shovel, Trench Hoe, Pile Driver, Dragline, Clamshell, Utility Crane, Magnet Crane. Outrigger equipped for greater stability.

WAYNE CRANE DISTRIBUTORS IN PRINCIPAL CITIES MAINTAIN COMPLETE SERVICE AND PARTS FACILITIES



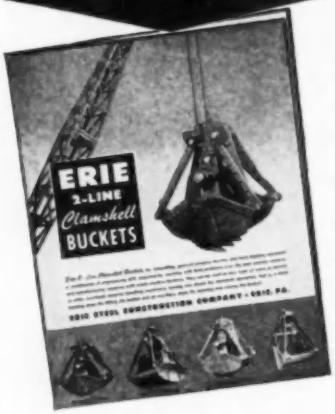
ALSO AVAILABLE

WAYNE CRANE Model 22—wheel-mounted, single engine, self-propelled machine.

Write NOW for Complete Information

Mfd. by WAYNE CRANE DIVISION—AMERICAN STEEL DREDGE COMPANY INC.—Fort Wayne 1, Indiana, U. S. A.

HOW TO GET
Larger
BUCKET
PAYLOADS



This new Erie Catalog makes it possible to quickly choose, from the 4 classes of Erie 2-Line Buckets, the right bucket for *your* crane and material. Perhaps your crane can operate a larger bucket, for Erie alloy welded steel buckets result in greater payloads through scientific bucket weight reduction. Remember, that on bucket work, the cost of the crane and the operator all ride on the bucket. Send for this helpful catalog or outline your conditions and our engineers will make recommendations.

Write for Catalog **2L-1** *Today*

ERIE
STEEL CONSTRUCTION COMPANY
494 GEIST RD., ERIE, PA

ed to severe impact and abrasion such as bucket teeth and sizing screens (electric arc). Instruction sheets for the two alloys plus a descriptive booklet covering the entire hardfacing line are also included.

To receive the trial assortment a check for $2.95 should be sent to the manufacturer at the above address or to any Airco sales office.

Rubber Traffic Cone

Manufacturer: Enterprise Development Corp., Burbank, Calif.

Claims: Rubber Trafficones have the appearance of steel yet are made of safe, collapsible rubber. One of the features of these cones is their durable, flexible construction which cuts down breakage, distortion and wear. The lightweight construction of these rubber cones makes them easy to set up quickly.

Stacking each cone adds only one inch; hundreds of them can be stored in a minimum of space. They have been tested in heavy traffic centers and proved effective.

Lift Truck Clamshell

Manufacturer: Hyster Co., Portland 8, Ore.

Claims: A 7/16-yd. clamshell bucket for a lift truck is another variation of the Load-Grab, a palletless materials handling attachment. The clamshell is only available for the Hyster 40 (4,000-lb. capacity) lift truck. The unit mounts on the sliding supports of the basic Load-Grab as optional equipment. Operated by a lever at the driver's right, the clamshell opens and closes by means of the same hydraulic power which spreads and contracts the arms of the standard Load-Grab.

Such bulk materials as sand can be handled by the tool. With a standard lifting height of 8¼ feet (to the bottom of the closed bucket) it can be used to load and unload trucks and railroad cars.

Larger Size Electrode

Manufacturer: Eutectic Welding Alloys Corp., 40 Worth St., New York 13, N. Y.

Claims: Eutectrode 24/49, ¼-inch in size, is a larger size diameter electrode to handle heavy cast iron castings. With special Frigidarc coating, this new rod is adaptable for overlaying and repairing large turbines, pumps, impellers, mixers, cylinder heads, housings, and other heavy types of castings requiring a heavy substantial electrode. Eutectrode 24/49 is also available in 3/16-, 5/32-, ½-, and

FAMOUS EXAMPLES OF **ARMORED CONSTRUCTION**

1. U. S. ARMY "GENERAL PATTON" TANK

Extended, heavy steel side plates protect sheaves
Heavier pins and axles
Tough steel reinforcing straps
Oversize forged steel hook and shackle

2. AMERICAN DIAMOND SHELL BLOCK

9304

Dropped, slammed and battered on the job, blocks and sheaves have to be *tough!* Compare AMERICAN *"armored construction"* . . . see why these blocks and sheaves serve better, last longer. Many types, all sizes, from 1½ to 250 tons, for wire rope only. Sold by distributors everywhere. Made by AMERICAN HOIST AND DERRICK CO., St. Paul 1, Minn.

ALSO MAKERS OF THE AMERICAN HANDIWINCH AND GENUINE CROSBY CLIPS

ASK FOR
AMERICAN
BLOCKS AND
SHEAVES

OVER ROUGH JAGGED ROCKS–IN MUD, GRAVEL, SAND–ON SMOOTH HIGHWAYS–

Generals meet all requirements

Where you have to go in off-the-highway to get the load, bring it out and over the road, use the *General H. C. T.* The sturdy, zig-zag tread digs deep for more traction in toughest going. Carries loads faster, safer, cheaper over the highway.

Where the job calls for most work off-the-highway use the *General L. C. M.* Tremendous lugs of rubber, designed in a self-cleaning tread, take bruising punishment under toughest conditions; carry the load over-the-highway smoother, safer, faster, cheaper.

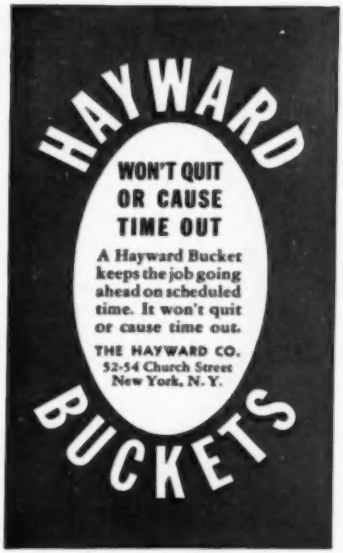
General Tractor Grader Tire. Thick lugs of rubber set high on a sturdy carcass develop extra drive-wheel traction. Deep-ribbed *General Ribbed Grader* for front or trailing wheels steer easier, forward or backward.

For utility trucks choose the sturdy *General All-Grip* truck tire. Extra-deep, extra-thick tread blocks develop fast, self-cleaning action for more traction on mud and gravel roads—smooth rolling on the highway.

The GENERAL TRUCK TIRE

THE GENERAL TIRE & RUBBER CO., AKRON, OHIO

3/32-in. sizes for all types of cold cast iron welding, requiring no preheating or dismantling of equipment. For use with either AC or DC machines Eutectrode 24/49 has a uniform burn-off rate, flows out rapidly and produces welds with tensile strength of 50,000 psi and Brinell 150-200.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WON'T QUIT
OR CAUSE
TIME OUT
A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.
THE HAYWARD CO.
52-54 Church Street
New York, N. Y.
BUCKETS

Welding Electrode

Manufacturer: Alloy Rods Co., York, Pa.

Claims: Arcaloy AC-DC stainless welding electrode has a smooth, stable arc with fine-spray weld metal transfer. The slag is easily and completely removed leaving no secondary film. The bead is uniform and full throated with straight-line feathered edges. Arcaloy AC-DC electrode is available in all chrome-nickel analyses. Packing will be in all-steel, moisture-proof containers.

4-Speed Transmission

Manufacturer: Fuller Manufacturing Co., Kalamazoo, Mich.

Claims: A new 4-speed transmission, model 4-A-112 is designed for both on and off-highway applications where a high percentage of operation through gears in conjunction with auxiliaries is required. It is especially applicable to earthmoving machinery.

High capacity in the new model is insured by the use of helical gearing in all four forward speeds. The helical gears are engaged by sliding jaw clutches. Extra-heavy bearings are used throughout. In combination with a 3-speed auxiliary transmission, model 4-A-112 provides 12 forward and three reverse speeds. When used with a 2-speed auxiliary, eight forward and two reverse speeds are obtainable.

Starting Fluid

Manufacturer: California Research Corp., subsidiary of Standard Oil Co. of Calif., San Francisco, Calif.

Claims: Chevron starting fluid is basically an ethyl-ether compound made to improve starting of diesel and gasoline powered equipment in cold climates. Its use has been simplified by packing the fluid in gelatine capsules which come in two sizes, 17 cc. and 7 cc.

The capsules are used with a special puncturing tool and priming system, injecting the fluid into the intake manifold. The fluid flows at minus 70° F. Additives in the starting fluid lubricate as the engine is started. The fluid will not corrode metal parts.

As certain cold room and field tests are concluded, the manufacturer anticipates that many diesel engine and heavy-road machinery manufacturers will use this cold-weather starting device in their regular production.

Diesel Lubricant

Manufacturer: D-A Lubricant Co., Inc., Indianapolis, Ind.

Claims: D-A "Extra-Treated" diesel oil is an additive-type lubricant designed for use in high-speed diesel engines.

Owners of certain type diesel engines operating on diesel fuels with a sulfur content in excess of 0.5% have been confronted with the problem of engine sludge resulting in stuck rings plus a high rate of liner wear. "D-A," designed to counteract the harmful effect of high sulfur fuels, eliminates sludging and wear conditions.

It is recommended only for use with diesel fuels with high sulfur content.

Fire Extinguisher

Manufacturer: American-LaFrance-Foamite Corp., Elmira, N. Y.

Claims: A new dry chemical type fire extinguisher has such new advantages as light weight, longer range, longer duration of discharge, more complete discharge of the dry chemical contents, gas-tight, all-internal expelling gas connections and built-in safety disc.

The dry chemical is nontoxic, noncorrosive, nonconductor of electricity, and nonfreezing. Recommended for flammable liquid and electrical fires and for putting out fires in motors, it is a hand portable unit identified as No. 30 Alfco Dry Chemical.

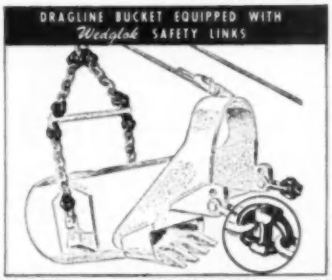
EASY TO ASSEMBLE

Wedglok

PATENTED

SAFETY CONNECTING LINKS

A vastly improved connecting link that combines safety with unique simplicity. Its strength exceeds the published strength of comparable alloy chain . . . assembles rapidly without the use of special equipment.



The ease of assembly makes WEDGLOK particularly useful for dragline buckets, slings and other equipment or machinery requiring the attachment of chain or wire rope. Produced in both regular and pear shape. Sizes ⅜" to 3".

Available at your local distributors.

Write for price list and data sheet.

SAFETY • STRENGTH • SIMPLICITY • ENDURANCE

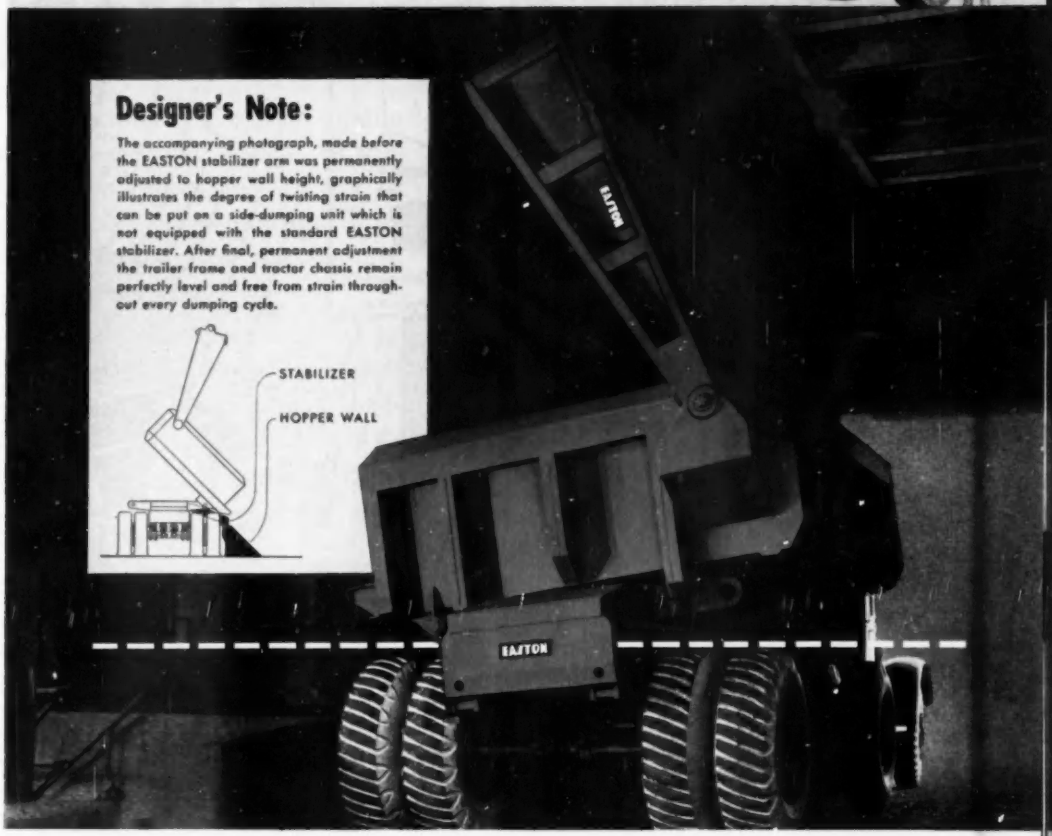
A PRODUCT OF

INTERSTATE DROP FORGE CO.

4077 N. 27TH. ST. MILWAUKEE 9, WISC.

The Sensational New MODEL TL

Illustrating the large capacity lift-door trailer recently introduced by EASTON and now entering service in cement plant and iron mining operations. Available in capacities to thirty tons, or larger. Dumped by automatic overhead hoist.



Designer's Note:

The accompanying photograph, made before the EASTON stabilizer arm was permanently adjusted to hopper wall height, graphically illustrates the degree of twisting strain that can be put on a side-dumping unit which is not equipped with the standard EASTON stabilizer. After final, permanent adjustment the trailer frame and tractor chassis remain perfectly level and free from strain throughout every dumping cycle.

Dollars and Sense...

Shovel to crusher quarry haulage is a highly specialized operation. It affords a clean-cut opportunity for time and cost study, and for the application of highly efficient, special purpose methods and equipment. That's why haulage costs can be so extremely low with EASTON Special Purpose Trailers. For a free time and cost study of EASTON Trailer Haulage on your property, write to: Easton Car & Construction Company of Easton, Pa.

B-1033

PATENTED
DOORLESS PAN

Model TRB · 14 to 20 tons

PATENTED
LIFT DOOR

Model TL · 20 to 30 tons ·

PATENTED
DROP DOOR

Model TD · 20 to 30 tons

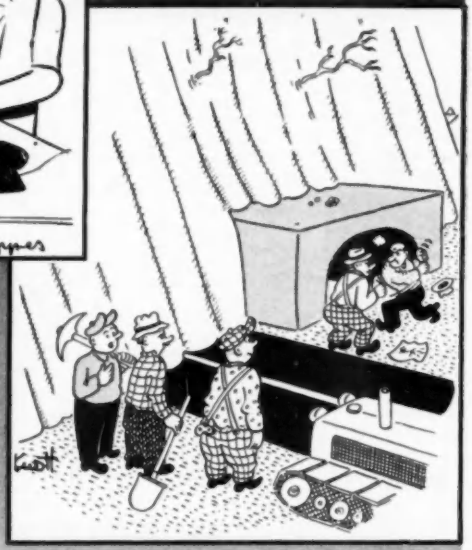
SPECIAL PURPOSE

EASTON *Trailers*

Makers of Easton Mine and Quarry Cars and Easton Heavy-Duty Truck Bodies

EX-LAFFS

"What'll You Charge to Dig a 2 x 6 Hole Six Feet Deep?"

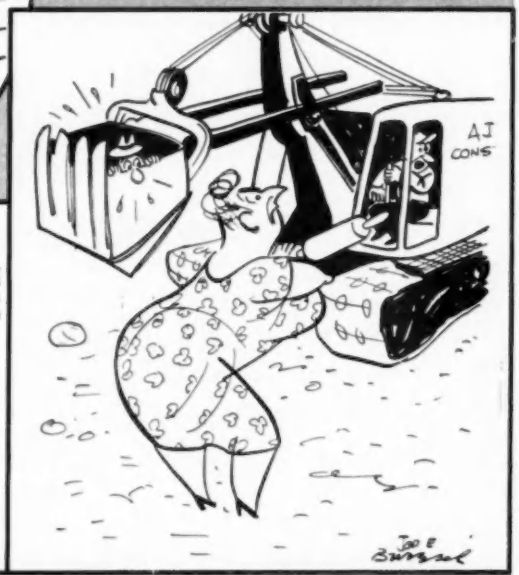


"The Foremen Are Deciding Now Whether We Move the Road or the Tunnel."

"... And Why Not May I Ask? ... Whose Apartment In the Near Future Is This!"

MICHAEL RUCK

"Wonder If There Is Anything to That Rumor About a New Job Way Down South?"



"Why, No, Mrs. Gleepnagle, I Don't Know Where Herman Is"!

Beat Gumbo, Slopes — and Schedules With NEW BUCYRUS ERIE *S-Type Scrapers*

You can work in sticky gumbo that loads hard and dumps *harder*, cling to steep slopes, stay on top of soft ground . . . you can gain time when time means money—with Bucyrus-Erie S-Type Scrapers.

Completely new from drawbar to push bumper, these modern scrapers are job-proved to give you faster loading, forced rolling ejection, low-centered stability, positive flotation. Get the full story on their plus performance from your International Industrial Tractor Distributor. 123748C

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Some features that make Bucyrus-Erie S-Type Scrapers stand out and stand up:

DROP CENTER FRONT AXLE — Provides level pull.

LARGE LOW PRESSURE TIRES — Insure maximum flotation.

HINGED APRON — Opens B-I-G for sticky material. Easily converted to conventional opening.

GOOSE NECK FRONT — Short turning radius — big throat clearance.

DOUBLE CURVED CUTTING EDGE — Rolls dirt into apron uniformly with reduced horsepower requirements.

POSITIVE ROLLING EJECTION — Full clean dump — FAST.

LOW MAIN FRAME — Provides low center of gravity, greater stability.

STRAIGHT LINE CABLE REEVING — No side bends — only one reverse bend.

STRUCK CAPACITIES

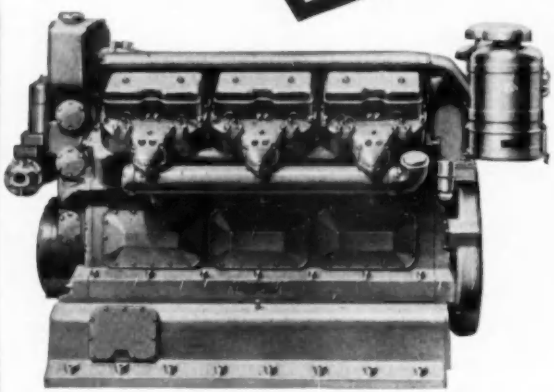
S-46	4 cu. yd.
S-68	6 cu. yd.
S-91	8 cu. yd.
S-113	10 cu. yd.

ALSO S-TYPE SCRAPERS in these Struck Capacities

S-170	15 cu. yd.
S-250	22 cu. yd.

...STILL

WHEN YOU THINK OF INDUSTRIAL AND CONSTRUCTION POWER, THINK OF THE BIG YELLOW ENGINES THAT SUPPLY SO MUCH OF IT



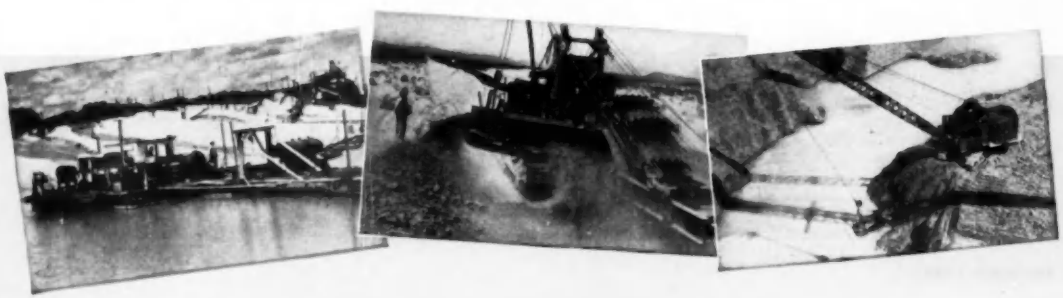
"CATERPILLAR" DIESEL D397 ENGINE—500 hp. (max.) at 1200 rpm. V-12—5¾" bore x 8" stroke. Equipped with blower.

"CATERPILLAR" DIESEL D386 ENGINE—400 hp. (max.) at 1200 rpm. V-12—5¾" bore x 8" stroke.

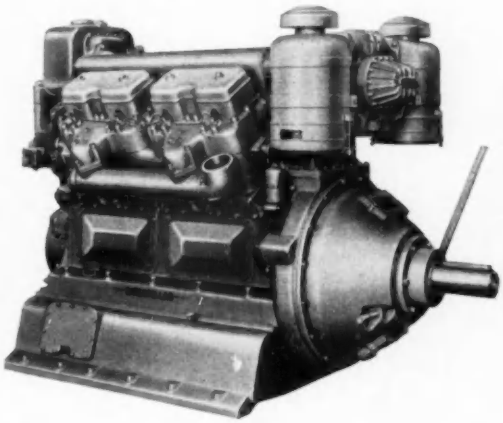
Now you can power your larger machines with available new-size engines that extend the range of "Caterpillar" Diesels to 500 horsepower. These bigger "yellow engines" are designed, built and job-tested with the same exhaustive thought and care that have enabled thousands of their older family members to run up records of forty, fifty and even seventy thousand hours of dependable operation. They have the same ruggedness, the same efficient fuel system and fuel economy, the same high all-round quality that have made "Caterpillar" Diesels world famous for low lifetime cost-per-hour.

When you need a bigger or more powerful shovel, dredge, ditcher, crusher, asphalt plant, or other piece of heavy power equipment, specify these bigger yellow "Caterpillar" Diesels. Let your "Caterpillar" dealer give you full information on these new engines. He is as near as your telephone.

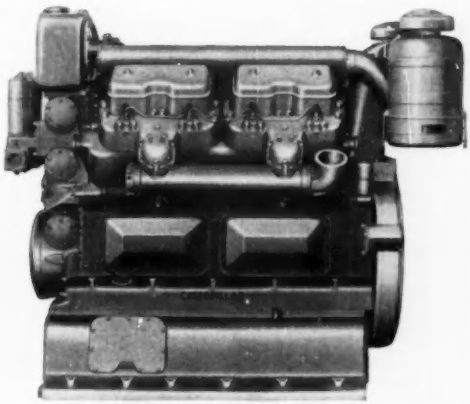
CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS



BIGGER YELLOW ENGINES ...FOR YOUR LARGER JOBS



"CATERPILLAR" DIESEL D375 ENGINE—335 hp. (max.) at 1200 rpm. V-8—5¾" bore x 8" stroke. Equipped with blower.



"CATERPILLAR" DIESEL D364 ENGINE—265 hp. (max.) at 1200 rpm. V-8—5¾" bore x 8" stroke.

CATERPILLAR DIESEL

REG. U. S. PAT. OFF.

ENGINES
TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

NOT in the *Contract*

Tommy came home proudly from his first day at school.

"What did you learn in school?" asked his mother.

"Nothing," said Tommy. Then, seeing the look of disappointment on her face, he added, "But I learned a lot during recess."

"Hank was sure leadin' the life of Riley."

"How'd he get all banged up?"

"Riley came home."

Two Englishmen bound for New York had sat side by side on deck-chairs without exchanging a word.

On the third day one of them fell asleep, and his book fell with a thud. It broke the ice. The other man picked up the book and the following dialogue took place:

"Thanks very much."

"Going across?"

"Yes."

"By Jove, what a coincidence — so am I!"

Wife: "I saw you the other day at the corner winking at the girls."

Grade Foreman: "I wasn't winking. That's a windy corner. Something got in my eye."

Wife: "She got into your car, too!"

A woman approached the pearly gates and spoke to Saint Peter.

"Do you know if my husband is here? His name is Smith?"

"Lady, we have lots of them here. You'll have to be more specific."

"Joe Smith."

"Lotsa those, too. You'll have to be more definite."

"Well, when he died he said that if I were ever untrue to him he'd turn over in his grave."

"Oh, you mean 'Pinwheel Smith'!"

"About this girl you want to marry: has she good connections?" asked the proud mother.

"Well, she never came apart when I was with her," replied the shovelrunner.

"That reminds me, Miss Fall,—please order some tractor seat replacements."

"What is your age?" asked the Judge. "Remember," he cautioned, "you are under oath."

"Twenty-one and some months," the woman answered.

"How many months?"

"One hundred and eight."

The shovelrunner's wife found her husband in a bar, sampled the highball he was drinking, and demanded, "How can you drink such horrible stuff?"

"See!" said the husband, "And all the time you thought I was out having fun!"

A Mississippi steamboat was stopped owing to a dense fog. An impatient passenger inquired the cause of the delay.

"Can't see up the river," said the Captain laconically.

"But I can see the stars overhead," the passenger came back sharply.

"Wal," said the Captain, "unless that loose boiler busts, we ain't going *that* way!"

Judge: "Why is life unbearable with your wife?"

Man: "Your honor, she insists on keeping a goat in our bedroom, and I can't stand the odor."

Judge: "Can't you open a window?"

Man: "What! And let out all my pigeons!"

A project super received the following memo from his grade foreman: "I'm sending an accident report about Casey's foot. He dropped an 18-in. wrench on it while fixing a tractor. Now under 'Remarks,' do you want mine or Casey's?"

The lady in the apartment house window was pitying the poor man standing on the street corner. He was evidently too proud to beg openly but every now and then someone would walk up to him, whisper a few words, and give him a dollar or two. The lady in the window smiled at him. and he smiled back, so she decided to do her share for charity. Taking a $2.00 bill, she put it in an envelope with a card bearing the words "Take courage," and tossed it to him. A bright smile was her reward.

But not all of it. That evening her doorbell rang and there was her acquaintance of the street corner: "Here's your $40.00, ma'm. 'Take Courage' won at 20 to 1."

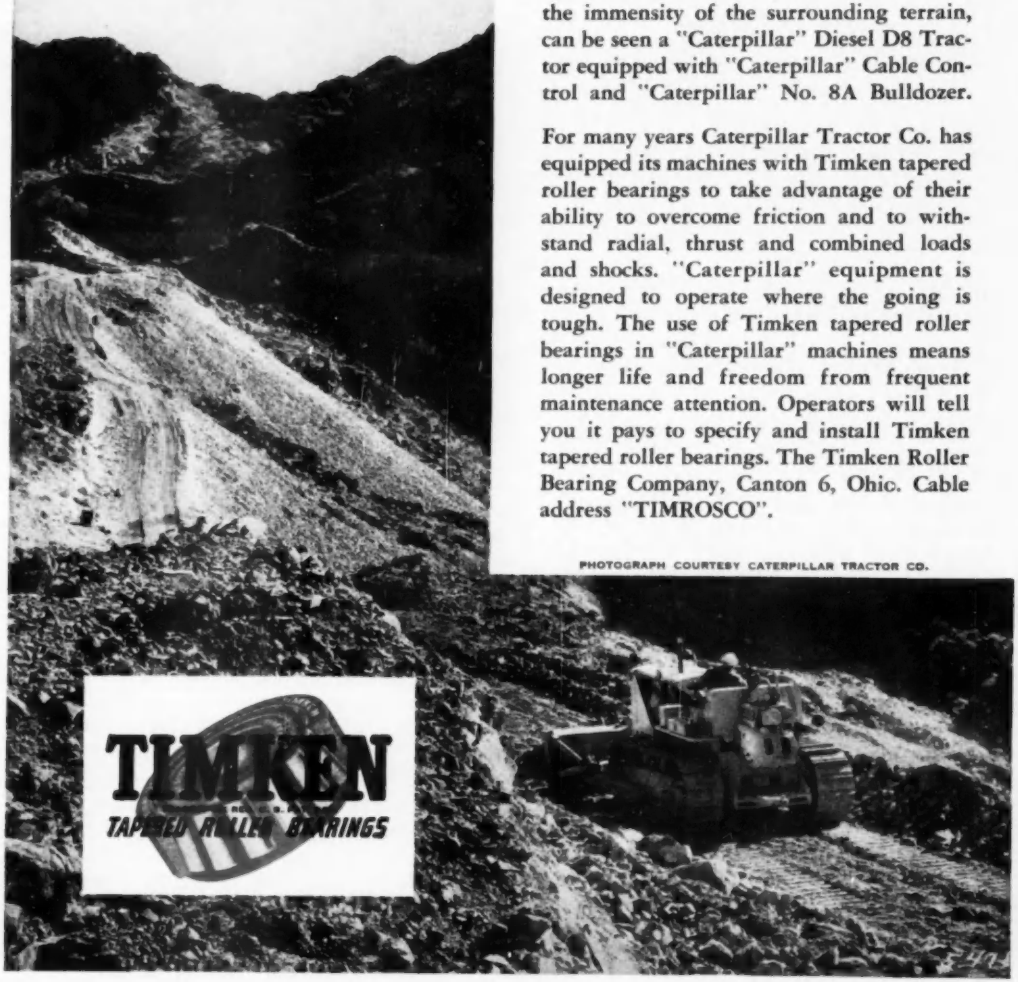
Tough Going at Yumagila Bend

This photograph shows part of the 7½ mile Yumagila Bend road under construction in the Rocky Mountains of Arizona. The project involved the removal of 100,000 yards of rock material.

At the bottom of the picture, dwarfed by the immensity of the surrounding terrain, can be seen a "Caterpillar" Diesel D8 Tractor equipped with "Caterpillar" Cable Control and "Caterpillar" No. 8A Bulldozer.

For many years Caterpillar Tractor Co. has equipped its machines with Timken tapered roller bearings to take advantage of their ability to overcome friction and to withstand radial, thrust and combined loads and shocks. "Caterpillar" equipment is designed to operate where the going is tough. The use of Timken tapered roller bearings in "Caterpillar" machines means longer life and freedom from frequent maintenance attention. Operators will tell you it pays to specify and install Timken tapered roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address "TIMROSCO".

PHOTOGRAPH COURTESY CATERPILLAR TRACTOR CO.



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL AND THRUST —▯— LOADS OR ANY COMBINATION

"Hauling unit of the

T. L. James & Co., Inc. and Guilliams Bros.

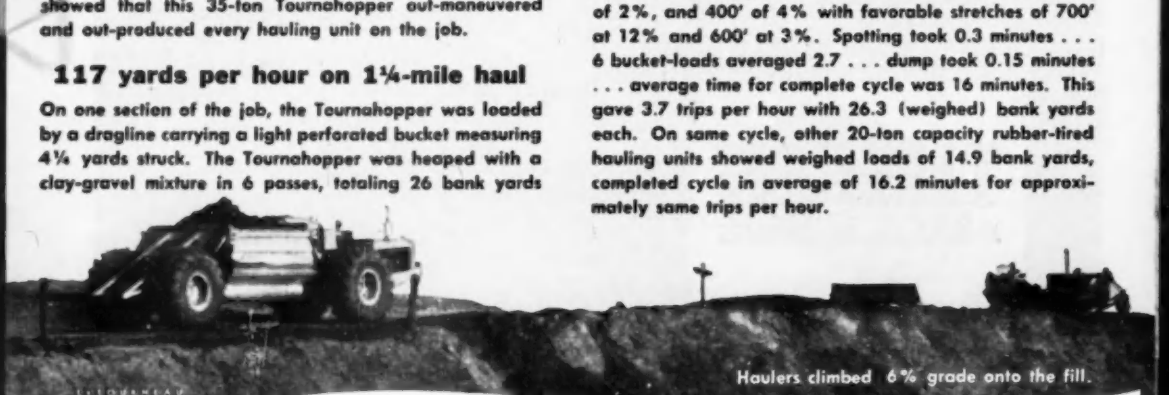
of Ruston, Louisiana, have been working a Tournahopper, LeTourneau's bottom-dump hauling unit, all through the '48 season at Enid Dam along with a fleet of other bottom-dump wagons. This flood control project for the U. S. Engineers is a 6,000,000-yard earth fill on the Yocona River, South of Batesville, Mississippi. Equipment works on a 24-hour, 7-day week schedule. Time studies showed that this 35-ton Tournahopper out-maneuvered and out-produced every hauling unit on the job.

117 yards per hour on 1¼-mile haul

On one section of the job, the Tournahopper was loaded by a dragline carrying a light perforated bucket measuring 4¼ yards struck. The Tournahopper was heaped with a clay-gravel mixture in 6 passes, totaling 26 bank yards (weighed) in average loading time of 2.77 minutes. Haul was 2½ miles round trip over well maintained and watered haul-road with all grades favorable except 400' of 6% adverse at the fill. The return had 1000' of 6% climb to borrow area. Tournahopper dumped its load in 0.18 minutes, spreading over 35'. Overall cycle averaged 13.4 minutes for 4½ cycles per hour.

97 yards per hour on 1⅓-mile haul

Several weeks later the Tournahopper was making a 2⅔-mile cycle in 16 minutes. Material here was sandy clay and gravel weighing 2900 lbs. per bank yard. 7,100' haul included adverse grades measured at 1200' of 6%, 1100' of 2%, and 400' of 4% with favorable stretches of 700' at 12% and 600' at 3%. Spotting took 0.3 minutes . . . 6 bucket-loads averaged 2.7 . . . dump took 0.15 minutes . . . average time for complete cycle was 16 minutes. This gave 3.7 trips per hour with 26.3 (weighed) bank yards each. On same cycle, other 20-ton capacity rubber-tired hauling units showed weighed loads of 14.9 bank yards, completed cycle in average of 16.2 minutes for approximately same trips per hour.



Haulers climbed 6% grade onto the fill.

R. G. LeTOURNEAU
LeT
EQUIPMENT

Mail today to: **R. G. LeTOURNEAU, Inc., Peoria, Illinois**

Please send complete information on Tournahoppers to handle approximately ..... yds. per month ..... ft. average haul.

NAME ..... COMPANY .....

TITLE ..... ADDRESS .....

CITY & STATE .....

future" ... says R. B. Guilliams

"Without a doubt the Tournahopper is the hauling unit of the future. It's just as fast on the haul road as our other hauling units. Gets in and out of bad spots with ease while our other units require the help of a dozer. In spite of its large loads, does not rut the fill or cut up our haul roads."

R B Guilliams

Loads weighed out at 26 bank yards.

51% of loaded weight on drive tires

Also interesting to note is that Tournahopper pulled out of loading pits and off fills unassisted where ordinary bottom dumps bogged down. Loaded weights showed Tournahopper carrying 51% of the load on the drive tires while other haulers could put only 46% on the drivers . . . an important Tournahopper traction advantage that pays off — especially in tough, slippery going.

"Big, easy target", says dragline operator

William Dewitt Wrenn, dragline operator, says: "Have been operating draglines for 8 years and Tournahopper is easiest unit I ever loaded. Sure is a big target . . . you don't have to spot bucket carefully . . . just swing and let go. Tournahopper gets under dragline and away in all kinds of digging better than other hauling units. Takes 6 to 7 full buckets . . . don't spill much off the sides with the big bucket like other bottom dumps."

"Easier, safer, faster", says Tournahopper operator

Morris Ashmore, Tournahopper operator, says: "Like the Tournahopper better than any dirt hauler I've ever run. It's easier and safer to operate than other rigs . . . won't jack-knife on slick haul-roads. On the fill I have control in dumping my load . . . can dump it or spread it and then get off the fill faster than any other hauler."

Like James and Guilliams you, too, will find Tournahoppers give you:

1. Better maneuverability in pit and on fill.
2. Faster spotting under loading unit.
3. Better traction . . . will go through where other units stall.
4. Faster loading in proportion to capacity.
5. Ease of operation . . . much less operator fatigue.

Ask about these big 35-ton, bottom-dump hauling units today. Tournahoppers will cut your hauling cost.

Tournahopper—Trademark C113

Tournahoppers dumped clean in 9 to 11 seconds.

LETOURNEAU TOURNAHOPPERS

PEORIA ILLINOIS

HIGH SPEED ON RUBBER PLUS TRACTION ADVANTAGES OF A CRAWLER

New trade literature

Title: **Dragline Bulletin**
Subject: A new 16-page bulletin, covering the 1-yd. P & H 455-A dragline contains on-the-job pictures, describes and illustrates the various features of the machine.
Where to Get: Harnischfeger Corp., Excavator Division, 4400 W. National Ave., Milwaukee 14, Wis. Ask for Bulletin X-11-1. (Free)

Title: **Engine Catalog**
Subject: Industrial engines and equipment for their operation on gasoline, kerosene, distillate or natural gas in a wide variety of applications are described and shown in a new 12-page, 2-color catalog covering four carburetor-type engines. The booklet includes sectional views, charts showing horsepower, torque and fuel consumption at various speeds, illustrations of job-adapted units, as well as specifications and dimensions.
Where to Get: International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill. Ask for booklet A-164-MM, "International Carbureted-Type Engines and Power Units." (Free)

Title: **Power Distribution Information for Open-Pit Mines**
Subject: A new 35-page booklet gives information on electric power distribution and protection for open-pit mines and quarries, explaining in detail the requirements of a reliable system and pointing out the dangers of many plans which do not provide adequate protection. Photographs and diagrams illustrate the text. One feature of the booklet is a diagram of an open-pit distribution system that opens to a 4-page width.
Where to Get: Westinghouse Electric Corp., P. O. Box 868, Pittsburgh, Pa. (Free)

Title: **Pressure and Flow Charts**
Subject: New air and hydraulic pressure and flow charts contain useful data tables for easy reference. Tables give such information as push and pull stroke pressures of cylinders, pipe size for hydraulic cylinders and systems, and recommended piston rod diameters for various loadings and mounting conditions.
Where to Get: Miller Motor Co., 4027 N. Kedzie Ave., Chicago 18, Ill. (Free)

Title: **Tournapull Broadside**
Subject: Information on the new electric-control C Tournapull is given in broadside TP-167. In addition to presenting specifications of this 150-hp, 16-ton capacity rig, the broadside features on-the-job action pictures. It also describes main design features.
Where to Get: R. G. LeTourneau, Inc., Peoria, Ill., or any LeTourneau distributor. (Free)

Title: **Diesel-electric Switching Data**
Subject: A new bulletin describes by illustrations with short captions the advantages of using diesel-electric locomotives in handling switching requirements. Its emphasis is on cost-saving.
Where to Get: Apparatus Department, General Electric Co., Schenectady 5, N. Y. (Free)

Title: **Payloader Catalog**
Subject: Complete specifications on the 1½-yd. HM Payloader are contained in a new literature release. The features of this tractor shovel are illustrated and explained.
Where to Get: The Frank G. Hough Co., 708 Sunnyside Ave., Libertyville, Ill. (Free)

DREDGES

HYDRAULIC DIPPER CLAMSHELL

Bolted sectional steel hulls for landlocked, inland waters

If you need a dredge, write us!

AMERICAN STEEL DREDGE CO. INC.
FORT WAYNE 1 · INDIANA · U.S.A.

DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

GET THOSE HOLES DOWN FASTER . . .

. . . with Bucyrus-Erie drill bits. Made from special high-carbon steel billets by expert craftsmen, they hold their shape longer even in the toughest going. Forged, machined, heat treated, Bucyrus-Erie drill bits have proved themselves economical, fast-working tools in all kinds of ground formations. Extra-long body section makes possible more sharpenings — longer life. They're fast-working because their deep, wide water-courses mix sludge efficiently and keep pulverized material in suspension. . . .

Investigate Bucyrus-Erie bits . . . see how they can help solve your drilling problems.

6A47

BUCYRUS-ERIE COMPANY
SOUTH MILWAUKEE, WISCONSIN

CLOSING POWER *Plus* WHEN AN OWEN BUCKET *Clamps Down*

It's the "Plus" features in a product that contribute largely to outstanding performance and build user satisfaction and profits.

Relax and swing an Owen from your boom. Closing Power PLUS is there when required for licking the toughest excavating jobs which will confront you.

OWEN CLAMSHELL BUCKETS INSURE A BIGGER DAYS WORK

THE OWEN BUCKET CO. 6095 Breakwater Ave., Cleveland, O.
BRANCHES: PHILADELPHIA • CHICAGO • BERKELEY, CALIF.

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date — 15 of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

Monighan 2-W diesel dragline, 70' boom, 2-½ yd. bucket. Recently overhauled. Central location. Box 3310

Northwest 95 3-yd. dragline. Shovels 1; 1¼; 1½ yd. Northwest No. 6; 5-W Monighan.
A. W. Nevers **Mt. Pleasant, Iowa**

P&H model 700 dragline, serial No. 3747 powered with Atlas Imperial diesel engine. Machine has standard track assembly, 60 foot boom, and is rated at 1¼ yard capacity. Entire machine in good operating condition. Excellent for yard crane or clam shell re-handling work. Price $7500 FOB cars New Mexico. Box 3317

2—Bucyrus-Erie model 10-B machines equipped as shovel-crane combination. Completely rebuilt and ready for work. Louisville, Ky.
1—Bucyrus-Erie model 20-B clamshell machine. Bargain—$7500. Evansville, Indiana.

Brandeis Machinery & Supply Co., Inc.
Louisville 8, Ky. **Evansville, Ind.**

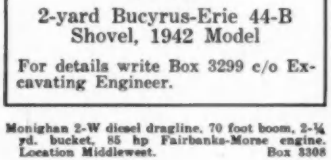
Bucyrus-Erie 52-B diesel dragline, 70' boom swampcats, central location. Box 3309

For Sale

2-yard Bucyrus-Erie 44-B Shovel, 1942 Model

For details write Box 3299 c/o Excavating Engineer.

Monighan 2-W diesel dragline, 70 foot boom, 2-¼ yd. bucket, 85 hp Fairbanks-Morse engine. Location Middlewest. Box 3308



SITUATION WANTED

By three 13 cu. yd. bottom dump Euclids. Experienced in heavy construction and willing to work around the clock. Ready for hire or adoption.

Brandeis Machinery & Supply Co., Inc.
Brook & Warnock St.
Phone CAlhoun 4741 Louisville 8, Ky.

1—MARION dragline, model 362, serial 8446, equipped with long cats, high gantry, maximum counterweight, Caterpillar D-13000 engine, 50' boom 2¼ yd. bucket, and 15' boom insert with 1⅝ yd. bucket, Kohler light plant.
2—ALLIS-CHALMERS tractors model HD 10 equipped with Gar Wood cable controlled bulldozers and single drum power units.
2—ALLIS-CHALMERS tractors model HD 10 equipped with Buckeye cable controlled bulldozers and double drum power units.
2—ALLIS-CHALMERS tractors model HD 14-C equipped with Gar Wood cable controlled bulldozers and double drum power units.
The above equipment is all in A-1 condition and may be inspected at our shop located at Vidalia, Louisiana, and can be loaded for shipment either by water or M. P. railroad. Atlas Construction Company, W. F. Johnson, Vidalia, La., telephone 87.

1—(Used) 20-B Bucyrus-Erie dragline, gas engine, new 1941, excellent condition. $6200.
1—(Used) 10-B Bucyrus-Erie shovel-dragline with trailer. $5000.
1—(Used) 30 Lorain dragline, gas engine. $4000.
1—(Used) TD18 IHC diesel tractor with Bucyrus-Erie bulldozer and double drum cable unit. $5000.
Several used diesel power units including Caterpillar, IHC, and General Motors. Sizes from 40 hp to 100 hp. All either rebuilt or in excellent condition.
1—(Used) 10x20 Universal roller bearing jaw crusher. Good condition. $1500.

E. F. Craven Company
P. O. Box 538 Greensboro, North Carolina

MECHANICS — HOME STUDY. Step up your own skill with facts and figures of your trade. Audels Mechanics Guides contain Practical Inside Trade Information in handy form. Fully illustrated. Easy to Understand. Highly endorsed. Check book you want for 7 days' Free Examination. Send no money. Nothing to pay postman. ☐ Carpenters $6. ☐ Auto $4. ☐ Oil Burners $1. ☐ Sheet Metal $1. ☐ Welding $1. ☐ Refrigeration $4. ☐ Plumbing $6. ☐ Masonry $6. ☐ Painting $2. ☐ Radio $4. ☐ Electricity $4. ☐ Mathematics $2. ☐ Steam Engineers $4. ☐ Machinist $4. ☐ Blueprint $2. ☐ Diesel $2. ☐ Drawing $2. **If satisfied you pay only $1 a month until price is paid.**

AUDEL Publishers
49 W. 23 St. New York 10, N. Y.

50% OFF

Unused Hendrix Dragline Bucket

Parts — Pins — Teeth Lips — Chains, etc., for all size buckets.

Write for complete list.

Address:

Excavating Engineer, Box 3318

Placer dredges, 4½', 6', 7½', elec., diesel.
Shovels-cranes-draglines, 1-yd. to 5-yd.
Bucyrus 50-B stm. shovels (3), diesel (2).
Buckeye trenchers, 120, 160, 203, 224, C20.
A-C gyratory rock crushers, 30" 27" 20".
Jaw crushers (4), 18"x30" to 42"x60".
Air compressor, 1574', diesel, 300 hp.
Nordberg 1250 hp diesel elec. gener. units.
Whitcomb 7-ton gas dinkey, 36" ga., rebit.
Porter, Vulcan 18-ton steam locos., 36" ga.
Locomotives, diesel, gas, steam, 5-80 tons.
Whirley gantry crane, elec., 120' boom.
Fairbanks-Morse diesel engine, 805 hp, rev.
B-E shovel front att., 2½ yd. 52B-55B.
H. Y. Smith Co., 828 N. B'way, Milw. 2, Wis.

Equipment for Sale
1—Marion 111-M shovel—3 yard
1—Lima 1201 shovel—2½ yard
2—Bucyrus-Erie 44-B shovels—2 yard
1—Bucyrus-Erie 54-B shovel—2 yard
1—Lorain 82 dragline—2 yard
1—Northwest 880 dragline—2½ yard
1—Lima 801 dragline—2¼ yard
4—D8's with Angledozers
1—Rome grader—6 wheel
2—LeTourneau scrapers
Available immediately. Price reasonable.
Box 3316

"TIRES" 20x1700, $68. With tube. UNUSED. Weight: 172 pounds. Airplane Tire Company, Box 1201-P, Tulare 1, California.

New Dragline Buckets

2-¼ cubic yard Red Arch, Type AX medium duty bucket.
3 cubic yard Red Arch, Type AY heavy duty bucket.
5 cubic yard Red Arch, Type AY heavy duty bucket.
6 cubic yard Red Arch, Type AY heavy duty bucket.

Bucyrus-Erie Company
Parts Division
South Milwaukee, Wisconsin

(Unused—Purchased in 1946)
1—2½ yard dipper bucket, S/N 5599, wt. 6975 lbs.
1—3 yd. dipper bucket, S/N 5598, wt. 7530 lbs.
Manufactured by Electric Steel Foundry Co., for use respectively w/44-B and 54-B Bucyrus-Erie shovels or K-480 Link Belt Speeder.

Brandeis Machinery & Supply Co., Inc.
Louisville 8, Ky. **CAlhoun 4741**

Owner's Offering
(Subject to Prior Sale)

Located at St. Paul, Minnesota
1—52-B Bucyrus-Erie diesel crane-dragline-shovel combination, including ext. $4000 worth of new and used spare parts. Where is, as is. $19,000
1—Robins Gyrex 4'x10' double-deck vibrating screen, ser. GD-6514. Completely overhauled. As is, f.o.b. cars. $1750
1—LeRoi 6-cyl. model M-RX-1S gasoline power unit, 160 H.P., ser. 103998, elect. starter. Excellent condition. As is, f.o.b. cars. $2500
1—Model 50 Caterpillar tractor, diesel, with 10' cable-operated bulldozer. Ser. 1E81. As is, f.o.b. cars, including all spare parts on hand. $2000

Located at St. Cloud, Minnesota
1—14" Superior McCully gyratory crusher, ser. 8467. As is, where is, including all spare parts on hand. $3000
1—10" Superior McCully gyratory crusher, ser. 8090. As is, where is, including new spare breaker head. $2500

J. L. SHIELY COMPANY
1101 N. Snelling Ave. St. Paul 4, Minn.

TUNNEL DRILLS

10—Gardner-Denver model D-99 4" drifters mounted on 30" feeds. In running condition, at $80 each FOB Louisville, Ky.

Brandeis Machinery & Supply Co., Inc.
Louisville 8, Ky. **Phone CAlhoun 4741**

Bucyrus-Erie No. 8 bit dresser. Complete and in perfect operating condition. Located in Washington State. Box 3271

Bucyrus-Erie model D-2 1 yard combination shovel and 50 ft. crane boom, fair lead, and Atlas diesel motor, also 1 yard Williams clam bucket, 48 inch Hayward orange peel bucket, 18 Ingersoll-Rand Jackhamers.

Milburn Machinery Co., Fort Worth, Texas

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For Sale

Continued from page 63

Wanted: Only Koehring model 304 crane or dragline with or without shovel or pullshovel attachment. Write to Willy Boutin, 3281 Mont-Joli St., Montreal, North P. Q. Canada.

Wanted: 30, 40 or 50-ton locomotive crane. Box 3315

Wanted: One Bucyrus-Erie 50-B horizontal thrust skimming shovel for loading thin veined coal.

The Utah Construction Company
1 Montgomery Street San Francisco, Calif.

Wanted: Complete chain crowd shovel front end equipment for Bucyrus-Erie 32-B dragline. Box 3219

HELP WANTED

Sales Representatives — Earth Moving Equipment
Large middle western manufacturer of allied equipment for crawler tractors (bulldozers, hauling scrapers) requires sales representatives with sales or construction experience for work in Northeastern U. S. and Eastern Canada; also Pacific Northwest and adjacent Canadian Provinces. Prefer ages 28 to 35. Work consists of sales contacts with distributors of heavy construction equipment and crawler tractors. Positions afford possibilities of permanent employment and advancement with ability and accomplishment. Reply should include age, educational background, experience and family status. Box 3303

Construction Superintendent
For West Virginia coal operator. Broad experience necessary to supervise all outside construction work including setting ventilating fans, building and maintaining mountain roads, constructing narrow gauge railroad track, building concrete block and steel buildings, etc. This is a permanent position with a secure future. Box 3306

POSITION WANTED

Position wanted as shovel operator. Can operate any make of machine; shovel; dragline; clamshell, or crane. Steam, gas, diesel or electric. Large or small machines. Box 3312

Relocation

Continued from page 18

million cu. yd. Soundings indicate that no solid rock is expected north of Gads Hill in cuts of 50 to 70 feet although a small amount will be met in the largest cut — 100 feet. Average haul for excavated material on this part of the project will be less than 2,000 feet. Local drainage will be taken care of in the same manner as on Tip Top.

This part of the project will reduce distance by 2.29 miles, curvature by 437°.

Bridge and culvert construction throughout the entire project as well as track work and fencing, is being handled by company forces. All work is being carried out under the general supervision of Roy P. Hart, chief engineer for the Missouri Pacific Lines. He is being assisted by W. H. Giles, engineer of design.

Notes from the manufacturers

Detroit Diesel Engine Division, General Motors Corp., Detroit, Mich., has appointed Leslie Southgate as Northeastern zone sales representative. His territory includes New York, northern New Jersey and all of the New England states. Southgate has been with Detroit Diesel since July, 1942, most recently serving as assistant to the marine sales manager.

Southwest Welding and Mfg. Co., Construction Machinery Division, Alhambra, Calif., has announced the appointment of A. H. "Art" Tetrick as sales manager of that division.

International Harvester Co., Chicago, Ill., announces the organization of a finance company, to be known as the International Harvester Credit Corp. It will be a wholly-owned subsidiary of International and its purpose will be to finance domestic notes receivable of the company for which there is no other source of financing available. The credit corporation is expected to be ready for business by the end of this month. International also announces the retirement of W. M. Parrish, assistant sales manager, manufacturers' sales, industrial power division, after more than 24 years' service. Parrish joined the company in 1925 serving in the industrial power equipment sales section until 1936. During World War II, he was assistant chief, construction machinery branch, War Production Board. In 1944 he was given the post he held at retirement.

Parsons Co., Newton, Iowa, has announced that Western Construction Equipment Co., Billings and Missoula, Mont., has been appointed distributor for Parsons Trenchliners in Montana and northern Wyoming. Harold M. Doolen is president, Jack L. Patterson sales manager, and J. A. Ring, Missoula manager, of the newly-appointed distributor.

Caterpillar Tractor Co., Peoria, Ill., has appointed Robert J. Loskill as assistant manager in the governmental sales division. His former position of district representative in the central sales division is being taken by B. N. Martin, present district representative in North Dakota and Saskatchewan, Canada. Distributors in Martin's new territory will include Missouri Valley Machinery Co., Lincoln Equipment Co., Nebraska Machinery Co., all of Nebraska, and McCoy Co., Denver, Colo. The Gibbs-Cook Tractor & Equipment Co., Des Moines, Iowa, formerly contacted by Loskill has been added to the territory served by J. M. Abbey whose district covers Wm. H. Ziegler, Co., Inc., Minneapolis, and Powell Equipment Co., Ltd., Winnipeg, Canada. Other personnel changes include that of Edward L. Malec, sales trainee since May, 1947, as district representative contacting Halladay-Dettman Co., South Dakota, Dakota Tractor and Equipment Co., Fargo, N. D., and Kramer Tractor Co., Ltd., Regina, Saskatchewan. Caterpillar also announces the establishment of a new parts depot now under construction in Indianapolis, Ind., and scheduled for occupancy this summer. The depot will serve distributors in Indiana, Illinois, Wisconsin, Michigan, Iowa, Missouri, Kentucky, Ohio, Tennessee, Pennsylvania, West Virginia, Maryland, and Ontario and Quebec, Canada.

H. O. Penn Machinery Co., Inc., New York 54, N. Y., announces the appointment of Robert O'Bryan, formerly a parts man, to the sales staff at the Mineola, Long Island, branch. "Hal" Barber who formerly held this position now covers the Brooklyn territory. Stanley E. Wardell, who until now handled Kings and Queens Counties, will concentrate in Queens as well as being advertising manager for the entire organization with his main office in the Bronx.

Keystone Driller Co., Pittsburgh, Pa., announces the formation of an equipment division for their industrial and construction machinery line. Robert H. Fox and Associates, Van Nuys, Calif., will direct engineering and marketing of these lines.

B. F. Goodrich Co., Akron, Ohio, announces the appointment of J. R. Thompson as manager of flat belting, conveyor, elevator and transmission belting in the industrial products sales department, and Paul W. Van Orden as manager of "V" belts and packing. Thompson has been manager of the Denver district of industrial products sales for the past two years having been with the company since 1930, with the exception of four years in the armed forces. Van Orden has been with Goodrich 21 years, all in belting sales and engineering.

New Savings with
PREFORMED
WIRE ROPE
For the few who haven't used it—but who will —Preformed wire rope promises the same kind of savings in time and money that regular users have enjoyed since 1934.
Preformed lasts longer, thus costs less to use. It saves time and money in installation and operation. It is safer to use and reduces safety costs.
So, for new savings, see your wire rope manufacturer or supplier about Preformed wire rope.

"Here's one case where wire rope care paid off big!"

"Usually when I show up on the job, I hear all the 'gripes' about wire rope but today it was different. This contractor got rid of the bugaboo of early rope breakage and saved himself thousands of dollars. He was feeling so good, he even slipped me a cigar.

"He's done everything in his power to minimize wear and breakage of wire rope by keeping the condition of his equipment right up to 'snuff'. And he's got the best bunch of shovel runners you ever saw. They certainly know how to handle these machines without abusing the rope.

"But that's not all. Last year they switched to Tiger Brand Excellay Preformed Ropes and they've been getting better service than ever before. You can see that with 25 trucks on the job, any work stoppage—even for half a day—would cost them real 'dough'."

How proper wire rope application saves you money

There is always one best type of wire rope for every application and the TIGER BRAND Wire Rope Specialist can help you select the right ropes for your particular needs. He'll check your equipment, keep you posted on proper rope care, and a dozen other things to assure long service life at low unit cost.

To help you maintain these operating standards, we have prepared a booklet entitled, "Valuable Facts about the use and care of Wire Rope." Every key man on your operating staff should be supplied with this much needed information. Send the handy coupon for your copy.

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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

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Please send me a copy of your booklet, "Valuable Facts about the use and care of Wire Rope."

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